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NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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THE DECLINE OF SILVER.

AT the moment of this writing (Thursday), silver is offered in the London market at 48d. per ounce, without buyers. This represents a relative value, as compared with gold, of 1 to 19.65, or a decline, since 1873, of more than 23½ per cent. on the annual average of that year. In view of this startling course of events, even Senator JONES and his associates will be likely to hesitate in their plan of "silver resumpting," if only from utter inability to say how much silver should be put into the dollar they propose to establish.

Dr. LINDERMAN, the Director of the Mint, has written a letter to Mr. RUGGLES, concerning the amendment now pending in the House of Representatives to the Senate Silver bill. This amendment would make 412.8 grains of standard silver a legal dollar, when it is worth (says Dr. LINDERMAN) only about 84½ cents in gold. If he had written to-day, he would have been obliged to say "only 81 cents gold." He adds (we quote from the telegraphic summary of his letter) that if such a dollar should be made an unlimited tender it would at no distant day expel gold from the country, and when once established as effective money would cause the foreign exchanges to raise in proportion to the depreciation of the money unit. For these and other reasons he does not think it would be wise policy to make silver an unlimited tender on the basis proposed. It would no doubt make the United States the best market in the world for silver, and cause the surplus stock of Germany, France, and other countries to come to us, and in giving our gold, cotton, and other products for silver, we would not even have a reasonable prospect of arresting its depreciation. Dr. LINDERMAN thinks that the only remedy from which beneficial and permanent results can be expected is an international convention, called to consider this grave question and agree upon the relations which gold and silver shall in future bear to each other in the coinage and legal-tender systems of the principal countries of the world.

To this we venture to add that even an international convention could scarcely deal satisfactorily with this grave question at the present time, since the all-important element—the future course of the market—is apparently beyond calculation. It is fortunate for us at this crisis that we have neither the silver standard nor the double standard of legal tender coinage. We are saved from a great revolution in prices, and a new complication of our financial problem, already complicated enough to puzzle popular opinion, and almost (we trust not quite) to obscure the popular instincts of equity and wisdom. One thing seems to grow plainer every day: we shall not climb to honorable specie resumption upon a ladder that sinks beneath us at every step. That sort of climbing is but the useless exercise of the tread-mill. If we wish to rise really and surely, we must beware of the treacherous footing of silver, and betake ourselves to the steep and difficult but solid and certain stairs of go ld. *

THE CENTENNIAL MEETING OF THE INSTITUTE.

THE American Institute of Mining Engineers, though only five years old, caught the general Centennial fever, and felt itself justified in assuming the airs of a ripe age at its recent meeting in Philadelphia. It entertained with dignity the representatives of all nations, and worthily upheld the reputation of American engineering, as well as American courtesy and good fellowship. No one who participated in the brilliant series of meetings, excursions, and banquets which filled nearly two weeks, ending with the *Conversazione* of Thursday, June 29, will soon forget their excellent arrangements and pleasant surroundings, or the exceptional luster of intellectual, professional, and social distinction which made them noteworthy, even among the crowding festivities of the Centennial city.. If we should boast that the banquets at Belmont and Pottsville (the former given by the Institute in honor of the foreign engineers present as its guests, the other to the Institu and its guests by the Philadelphia and Reading Railroad Company) surpassed in extent and *éclat* any entertainments that have taken place in the United States since the Centennial celebration began, we should but repeat a remark which many persons outside of our body and so situated as to be able to judge of the matter, have already often made. But for such comparisons we care nothing. It was the absolute, not the relative, delight of each occasion that roused the enthusiasm of its participants. Everybody rejoiced and was glad because he was having a superlatively good time—not merely a better time than somebody else had had. Out of all the elements which contributed to this great success, we must be satisfied to bestow passing mention upon a very few.

1. The American Society of Civil Engineers, which had extended to our young association, from the outset, a hearty sympathy and encouragement; had arranged with us (through the Centennial Committees of the two bodies) a harmonious and effective place for the convenience and profit of members of either, attending the exhibition—involving the reciprocal hospitality of the respective headquarters and the complete interchange of all social and professional facilities; and had taken an active and most creditable part in the joint meeting of the two societies on the 19th and 20th of June, to discuss the great subject of Technical Education, completed its work of cordial co-operation by attending the meetings and sharing in the excursions and entertainments of the Institute, in the persons of a large number of its leading members. There has never been jealousy or rivalry between the Society of Civil Engineers and the Institute; but this absence of unfriendly feeling, though a blessing, was negative and colorless, compared with the positive and enthusiastic alliance which has recently sprung up, and which came to full, bright blossom in Philadelphia.

2. A splendid hospitality was extended to the Institute and its guests by the Philadelphia and Reading Railroad Company, through Mr. GOWEN, himself an associate of the Institute, and fully able both to comprehend and to fulfill the highest possibilities of the extraordinary opportunity which this occasion offered. At Pottsville, Mr. GOWEN played to perfection the part of chairman and host to more than 400 guests. The laurels which he won on that occasion, however, had been somewhat dimmed in advance by his own remarkable speech at the BELMONT banquet, which touched in succession with skillful and fervid eloquence the chord of national feeling in every heart, calling thunderous echoes of applause from one after another of the foreign delegations present, as he bade them all welcome to the international reunion of science and industry. Perhaps no other single organization in the world has more to show to engineers than the company which Mr. GOWEN represents; and, certainly, the three or four days of almost continuous travel, in special trains or by steamer to points of interest, bore witness that both the intention and the performance of the company were fully equal to its unrivalled opportunities for such entertainment.

3. The very large representation of engineers from foreign countries, though not unexpected, proved, perhaps, more important than had been anticipated, as an element shaping the nature and spirit of the meeting. Not merely the professional contributions of such men as LOWTHIAN BELL and Dr. WEDDING, but also the continued presence and evident sympathy of a host of other not less illustrious names, gave an international air to all the proceedings. At various times, speeches or papers were presented in French or German, and never without finding an appreciative audience. It was, indeed, a pleasant surprise to note how many of our American engineers are more or less acquainted with continental languages, and how general is the knowledge of English among engineers from abroad. We may be permitted also to record with satisfaction the unanimous expression on the part of our foreign guests, of their thorough enjoyment of the meeting, and their admiration both of its projected arrangements and of their completely successful fulfillment.

4. The usual result of such elaborate provisions for the entertainment of a professional body, is the comparative distinction of its professional work. The excursions and dinners are apt to swallow up the papers and discussions. That this was not the case at Philadelphia, the full reports of the proceedings and debates will show. A large number of really memorable papers were presented, and read; and in the future volume of Transactions containing them, this Philadelphia meeting will not be inferior to other gatherings of the Institute, attended with less festive display. Indeed, the solid foundation of interchange of actual knowledge afforded by the formal sessions and *conversaziones* of the Institute was the best possible basis for that social interchange which formed so fair a superstructure. This was made particularly (sometimes amusingly) evident by the actions of the foreign guests, whose ready note-books sprang from their pockets at all moments, to catch, even in the midst of hilarity and relaxation, the valuable hints or facts that "dropped out by the way."

5. The arduous labors of the Local Committee deserve to be specially mentioned; though nothing can be so convincing a testimonial of their merit, as the complete success of all their plans Barring the unfortunate acceptance of the Judges' Pavilion, in the Centennial grounds for one of the sessions, all their arrangements were admirable. That one instance was enough of an exception to prove the rule. But the Civil Engineers had managed (Heaven knows how!) to get through a whole meeting in the same hall; and no one "foresaw until afterwards" (as we say in Cork) that locomotives, trombones, and other Centennial accompaniment would make business impracticable. However, an

early adjournment that day furnished an opportunity, not down in the bills, for individual excursions through the Exhibition—where, by the by, there is a good deal that is worth seeing. The other sessions, held in the Franklin Institute rooms, in the city, were well attended from first to last. In connection with the Local Committee and Mr. GOWEN, we must mention the special Committee on Excursions and Entertainments, and particularly Mr. ECKLEY B. COXE, whose share in the conception and execution of the magnificent Belmont banquet we should describe more explicitly, but for his own desire to the contrary. Mr. COXE will also come in, one of these days, with the other members of the Centennial Committee of the Institute, for a share in the praise which we intend to bestow on that committee *(quorum pars sumus)* when its triumph at Philadelphia shall have been completed. For the present, it is enough to record that the modest and practical programme of that committee has proved either very wise or very lucky. The rooms of the Institute in Girard Street have become the favorite resort and rendezvous of engineers from all nations. On the occasion of Mr. HEWITT'S reception, they proved adequate to the entertainment, physical as well as intellectual, of a large gathering; and, what is more important, the facilities for reading, writing, conversation, registry, etc, planned by the committee in connection with them, have been largely employed by members and guests—the best proof of their happy fitness to an actual need.

We believe the desire is universal throughout the Institute that the October meeting also shall be held in Philadelphia, and that, in lieu of excursions or general social festivities, the sessions shall be interspersed with opportunities for the study of the Centennial Exhibition. With this wish we are heartily in accord. Philadelphia is the best place; but of course no attempt should be made to parallel the unique magnificence of the recent meeting. *

STREET PAVEMENTS.

THE city of Toronto, Ont., has the good fortune to possess an honest and experienced engineer, Mr. F. SHANLY, in charge of its improvements. He, with the good judgment of an experienced engineer, adopted the practical solution of the vexed problem of the best kind of street pavement. He sent to New York, Boston, and Rochester, examined the pavements there in use, and bases his recommendations on what has been actually proved in those cities. It is very evident the city of Toronto is not going to be bled in the interests of inventors of patent pavements while Mr. SHANLY is in charge of its works.

We quite agree with Mr. SHANLY that the concrete, and patent stone pavements, of which we have examples in this city, are unsuited to the rigorous climate of Canada, for they show very plainly the effects of the frost here, even after a mild winter. The wood pavement has not proved a success here, but this was, doubtless, partly because of defective construction, and because no preservative agent was employed to prevent the decay of the wood. In Europe the wood is not only prepared by treating with creosote, salts of iron or copper, or lime, etc., but the surface of the wood pavement is covered with a coating of asphalt, which, preventing the access of surface water, has added greatly to its durability. We noted recently that so satisfactorily had these wood pavements resisted in the experiments to which they had been subjected in London, that it is proposed there to give them preference, for many reasons, over granite blocks.

From a report which Mr. SHANLY has recently made upon the different kinds of pavement proposed for the streets we make some extracts, for his remarks contain information of value to other cities, and place upon record the present state of the pavement question.

"1. The Guidet pavement of granite blocks, averaging 12x5x8 inches, laid on 6 inches of concrete and 6 inches of sand, used on Broadway, New York, costs about $5 per square yard, has been down twelve years, and has had $6,000 expended upon it in that time; length, 2½ miles; requires now a further expenditure of $4,000. Laid in our streets this pavement would cost probably $6 per square yard, the material being so much more costly here than there.

"2. The 'Belgian block' pavement, being stones 5x6x6 inches average, laid on a bed of sand 6 inches deep. It is used on some of the leading thoroughfares in New York, and answers a good purpose. Its cost is about $3.50 per square yard; in our city this would probably come to $4.

"3. The granite blocks used in the city of Boston, 4x7x8 inches, laid in from 9 to 12 inches of sand or gravel, make an excellent pavement, and the material being close at hand, and comparatively cheap, the cost does not exceed $3.25 per square yard.

"4. The Medina stone pavement used in the city of Rochester seems to answer a good purpose. The blocks vary from 2 to 3x8x8 inches. They are laid upon 16 inches of sand, gravel or broken stone. This pavement is also extensively used in Buffalo, and costs in either city about $3 per square yard; with us it would probably reach $3.50.

"Second, the wooden block pavement of which there are several varieties, but which may practically be classed as one, may be said to have been abandoned in New York, its life having been found not to exceed four, or at most, five years, and is now being replaced with some one of the above named varieties of stone blocks.

"In Boston the experience is more favorable to this kind of roadway, the system there pursued being nearly the same as that adopted on King Street in this city, only that the plank foundation is dispensed with, and gravel or sand six inches deep, alone used. On this the blocks are laid, and the whole thoroughly saturated with water for the purpose of settling and consolidating the foundation. In some cases the sand is first saturated with carbolic oil, which, being absorbed by the road, adds to its durability. Some of these pavements in Boston are in good order after a wear of six years.

"The cost of this descrip ion of pavement in pine or spruce is about $2.25 per square yard. With us the material being so much cheaper, it can be laid down for not more than $2. Another variety of wooden block pavement is being adopted in Detroit, and to some extent in Chicago and other Western cities; but from what I can learn there has not as yet been sufficient experience of it to admit of an opinion of its merits. It consists of round cedar or tamarack blocks about ten inches long, laid on sand or gravel as before, the spaces being filled in with gravel, and in some cases with gravel and tar mixed. It seems probable that this will make a durable roadway; but I am inclined to the belief that the wear of the blocks will be uneven, causing the surface to become rough, like what is known as the cobble stone roadway.

"Several other varieties are used, but they only differ from each other, and the above, in certain small details of little consequence as to relative costs. Any of them can, I think, be laid down at from $2 to $2.15 per square yard, where the timber used is pine, cedar, or tamarack; and about $2.50 where white oak is used; which, as regards wear, will be superior to all other timbers, though in the matter of durability, otherwise I am inclined to the cedar.

"Third, the next class of pavement used in New York and Boston, and also in some of the Western cities, is the asphaltum, or bituminous concrete, of which there are several varieties, the most approved, however, being the 'Abbott patent,' used in Cleveland and Brooklyn, and the 'Grahamite,' used in New York and Boston. From the information received, and the specimens I have seen, I am not inclined to favor its adoption in our climate to any large extent. It has been used a good deal, and it is claimed with advantage in repairing wood and stone pavements, and also in Macadam roads, by coating them with composition to the depth of about three inches. The cost of these seems to vary from $1.75 to $3 per square yard.

"So far I have not touched upon Macadam roadways, but I may shortly state that those in the Central Park, New York, answer a very excellent purpose. They are built by first laying down about eighteen inches of large stone blended with fine sand or gravel six inches in depth, of a somewhat smaller stone, also blended as before, then another six inches of the ordinary broken stone and gravel, each layer as placed being subjected to a heavy roller and water, freely used.

"These roads cost from $2 to $3 per square yard, and are expensive to keep in repair where the traffic is heavy, but they answer very well for parks and streets where pleasure driving is the main use made of them.

SIDEWALKS.

"In New York the stone flagging is universal the cost per square yard being about $3, and of the stone curbs seven cents per lineal foot.

"In Boston, brick is chiefly used, costing $1.25 per square yard. Where stone flags are used, they are put down at the expense of, and by the property holders.

"Concrete, a mixture of tar and gravel, has also been used. The cost is about $1 per square yard, but the experience of it is not satisfactory.

"In our climate brick is not admissible, and the concrete would seem, from our own experience of it, to be equally objectionable. The stone flags are very expensive, and in our climate apt to crack open and be displaced by the frost. We are, therefore, brought down to the only alternative—the wooden blocks—the experience of which, in that position, has been very satisfactory. The cost will be not more than $2 per square yard, or probably less.

"Whilst I am not prepared to recommend any pavement which is not, as to quality of material and workmanship, the very best of its kind, I am quite alive to the necessity of exercising a wise economy in the selection, and propose that your choice be made from the above pavements, used in Rochester, or something equally cheap and durable, and from the best variety of the wood, which, I am inclined to think, is the oak block. The asphalt or concrete, I would recommend a trial of, on some short streets, covering with it the present macadam.

"For sidewalks, I recommend the wooden blocks, and for curbs, the stone stringer; no new sidewalks to be laid down henceforward on certain principal thoroughfares, to be determined upon in any other way.

"In preparing for these improvements it will, I think, be well to call for tenders for each class, without naming the variety, by which means you will be enabled to get estimates for all kinds, and may, perhaps, be placed in a position to make a better selection than I have—upon our present information—recommended.

"A great deal has been said lately about various kinds of artificial stone, and some offers have been made for the adoption of it, as curbs, sidewalks, etc., and while I would hesitate to condemn it without some experience of its qualities, I would strongly recommend that it be used only after an ample test, made at the expense of the manufacturers, and to the satisfaction of your Board.

"F. SHANLY, City Engineer."

ABSTRACTS OF LECTURES ON MINING.—No. II.

By Prof. W. W. Smyth, M.A., F.R.S., School of Mines, London.

(From the London "Mining Journal.")

THERE are a number of preliminary matters with which we ought to be acquainted before entering on the practice of mining. For example, with regard to the legal side of the matter, a very extensive library might be formed of treatises on the mining laws of different countries, and in our own country a number of works exist on the subject. Of these I need only mention the treatise by Mr. BAINBRIDGE as the one best known, and another by Mr. WHITTON ARUNDEL, with other valuble works; special works have also been brought out on the peculiar laws founded on the old customs of some of the districts, as notably a work on the Stannaries of Cornwall and Devon, by Mr. TAPPING, and other similar works published at the office of the *Mining Journal*. It would appear at first sight that the royalty on working certain minerals should not be assessed or made payable until the mine in question was working at a profit, seeing that for a time—often a considerable time—the works must be carried on at a loss until the workings can be developed. In certain countries—*e. g.* France—such is the case, where the mines belong to the Government or the Crown, and it appears to act beneficially in encouraging the operations, especially in periods of difficulty. Out of twenty mines worked at any one time only one may then be yielding a profit, and it seems a very fair proposal that they should not be called on to pay royalty while they are working at a loss. But in England, where the mineral belongs to private proprietors, this must be an extremely difficult thing to do; nevertheless, it has been done in some cases. As a rule, too, an Englishman is apt to resent that interference with his arrangements which must necessarily occur if he is to pay royalty only on the clearance and not on the whole bulk raised.

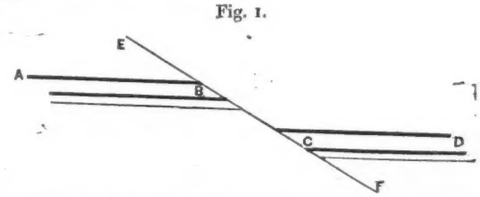
One of the simplest codes of mining law in the world is that of Spain, and it

is important that anyone who is likely to travel should know something of it, inasmuch as it is not only in force in Spain, but has been retained in the Spanish colonies, and especially in the mining districts of that wonderful meridional chain of mountains in America, which is so rich in metalliferous wealth. For example, a miner having come upon a lode, and determined its position, calls upon the proper authority, and claims the right to a piece of ground 300 varas (a vara is about 33 English inches) in length and 200 in breadth, which is marked off at the corners by posts kept white-washed. An enterprising person, wishing to carry his works still further, is again allotted another and similar "sett," and in time he can take up a number of such pieces, provided each is treated and marked off as a separate sett; a certain rent being payable for each. It is usually the case in Spain that if a certain number of men are not engaged for a certain number of months in the year, the sett shall be forfeited, and this was a condition also among the old customs of Derbyshire; and in California a somewhat similar custom holds good, a man finding a piece of ground lying idle can take possession of it, and then he is said to "jump the claim." In Spain, portions of land, or "setts," supposed to contain ores, are held by speculators, professional men, etc., ready to sell to miners when a rush is made toward the district, and it is well to bear this fact in mind when intending to deal with mines in that country.

I have now to pass to what we may call the natural history of the localities in which the mineral deposits are found, and must occupy this lecture in dealing with a subject which in the main belongs more especially to my colleague, Prof. RAMSEY, but which offers some points of very special interest to the miner—I mean the subject of geology. Everyone is aware of the broad division of the rocks which form the crust of the earth into two great classes, in one of which—the stratified rocks—we have a number of beds, or layers, just as I might place a number of these slates on one another; generally it is only a small minority which contain minerals useful to the miner. The other class of rocks, which do not exhibit any parallelism of that kind, are called massive, or crystalline rocks—as granite or porphyry, varieties of lava and volcanic rocks. In some countries the latter occupy a considerable proportion of the surface, but in this country by far the larger portion consists of stratified rocks. You could not have a better example of the general characters of the stratified rocks than the beds passed through in sinking a coal pit. I must refer you to books or lectures on geology for the history of these rocks. In the first place we must remember that the minerals which it is our object to work are scattered either in beds more or less horizontal, or they form bunches or masses of various kinds, in which their relation to other rocks is not so clear, or they form deposits which have intersected other rocks after they have solidified. The former are known in different districts as beds, strata, seams, delfs, sills, measures, bassets, mines, and sometimes girdles. Some of these are evidently miners' names, as for instance girdles, so called from the ring-like beds seen surrounding a circular vertical shaft. The first point to determine is whether the rocks are of this character, and present this parallelism, by the examination in cliffs, or by sinking small shafts; and it is very important to know this, because in most cases these beds have been deposited over large areas, and thus if we find a bed of given thickness and quality in a given place, we have great reason to expect that bed to be continued for some distance. If the beds have remained horizontally as at first deposited, the surface of the earth would present great monotony, and there would be few or no mining operations, but in nature we find the beds tilted into various positions, and hence it is necessary for us to ascertain the *direction* towards which they dip, or incline, and the *amount* of inclination, measured from a horizontal line. The former is determined by means of a compass—the magnetic north generally being used—the inclination measured by means of a clinometer or angle measurer. For the inclination the terms rise and dip are commonly used, but in some western districts of England, after fixing on a point on the bed, the direction upwards is called "to the land, or the rise," that downwards is spoken of as "to the dip." Another point to be noticed is the direction of the bed, which will be at right angles to the direction of dip; in collieries the term water-level is sometimes used; the geological term is strike. The upper boundary of a bed is termed roof, the lower (or that on which we walk in the levels) is called the floor, sole, and pavement, the latter term being used in Scotland. With regard to the least thickness of a bed of coal which is capable of being worked with advantage, it is impossible to give a single answer, inasmuch as many other circumstances besides thickness of seam have to be considered. The most valuable seam in Europe has been the "ten-yard seam" of Staffordshire, which is really an association of several different seams. In France there are some beds of coal of still greater thickness, but they extend for only limited distances compared with our Staffordshire seams, and are subject to irregularities. Some of the beds of lignite, or brown coal, found in Styria, Bohemia, Hungary, Saxony, etc., reach from 60 to 100 ft. thick. On the other hand, you may see seams worked in Somersetshire with a thickness of only 11 in. In most parts of the country a seam is considered thin when it gets to 2½ ft., but 20 in. in many parts is worked when the other circumstances are favorable. In the case of stratified iron ore it is not unfrequent to have seams running from 6 to 12 or even 18 ft.

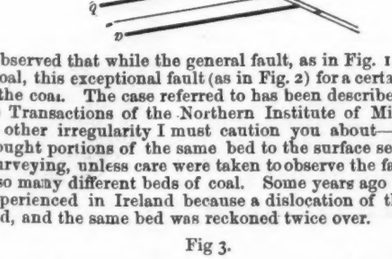
For facts respecting the disposition of the strata I must refer you to general treatises on Geology. Greenwell's Treatise on Mine Engineering (although it is deficient as regards the metal mines), and Phillips's Manual of Geology, contain much information on this subject useful to the miner. The strata are tilted at various angles, sometimes so as to be nearly, or perhaps quite, vertical, or even, as in the rocks of some parts of the Alps, turned quite over on to the other side, and these beds, we must remember, were once deposited horizontally, or nearly so. Perhaps there is no mining district in the world so notable for the inclination of the rocks as Belgium and the North of France, where it has happened that a single vertical shaft has cut one bed of coal three or four times, owing to the zigzag manner in which the seam has been bent. In England the contortions and bendings are more rounded than angular, but we have three districts showing indications of this contorted character. One of these is the extreme northern part of the pottery district of the North Staffordshire coal field, another is the Pembrokeshire part of the South Wales coal field, and the third is a district on the northern side of the Mendip Hills in Somersetshire. To these bendings and foldings the miners apply the term saddle, those in the hollows being termed trough saddles, and those on the summit of the bend knuckle saddles. It is necessary to observe that in some cases disappointment is experienced on finding that, although we are dealing with a stratified deposit, it does not bear out that character of uniformity over large areas which is expected. Even in the same quarry the physical characters of the bed vary considerably, and this is more strikingly the case when it is followed out for great distances. In some cases, however, the extraordinary uniformity which characterizes certain beds over large areas—sometimes hundreds of square miles—is very remarkable. In some instances great mistakes have occurred by mistaking the phenomenon which geologists term cleavage for the planes of bedding of a rock. This cleavage may be seen in roofing slates, nearly all of which we owe to the property the slate rock has of cleaving, or dividing into thin plates, along the planes of cleavage. The true lines of bedding in many of these cases can be seen variously situated as regards the cleavage planes, marked out by difference of tint, etc., sometimes called water line. Many of the so-called slates of Derbyshire and West Yorkshire are portions of rock really split along planes of bedding. The direction of cleavage is often very constant over large areas, and, therefore, if the rocks in those areas are variously tilted, the cleavage planes will be variously situated as regards the planes of stratification. It is important that we should be able to distinguish readily between the two sets of phenomena. As regards the variation of quality as we trace out a bed, a seam of coal is often found, which, while retaining its horizontal position, changes its character, becomes stony, or contains much pyrites, or becomes shaley, or approximated to blackband ironstone; and, therefore, it is necessary that we be prepared for such changes. They frequently come in very gradually, commencing at first no thicker than a knife blade, but getting larger as we proceed, till they come to replace a considerable proportion of the coal seam itself, or separate it into two parts, either or both of which may not be worth working. Such interruptions are apt to trouble certain districts very frequently, and I have known whole districts abandoned from such causes. Again, frequently the roof is said to come down—that is, you find the seam, or great part of it, taken up by a mass of sand stone; this is due to erosion in the original bed while at the surface, and subsequent filling up of the valley formed by a deposit of sandstone; if you bore through such a mass you are generally rewarded by finding the seam in its original condition on the other side. One of the most remarkable cases of this kind has been described by Mr. BUDDLE as occurring in the Coleford High Delf, in the forest of Dean, called by miners the horse; and there are few coal districts in which something of the sort may not be met with. Occasionally similar phenomena have occurred on a much larger scale, so large as to effect not only the one particular seam but the whole of the measures, and they have then been regarded as the boundary of the field, whereas subsequent investigation has proved that it is merely a large erosion, and that the measures re-appear on the other side. There is yet another very important class of interruptions, which belong to what the geologist calls a fault, where you come suddenly to a cutting of the beds, and a displacement of them up or down.

Fig. 1.



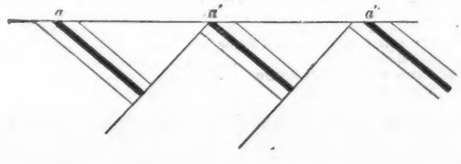
This is called by the miners a hitch, or trouble, if on a larger scale a dyke; and to represent the displacement of the beds it will be called a trap up, or down, as the case may be, or a throw. It may amount to a few feet or yards; in some cases to 2000 ft. and upwards, and the line of fault very frequently contains a thin parting of clay or other matter. In some districts these faults are exceedingly common, in others you will find nothing of the kind. Fortunately there is an almost invariable rule for ascertaining the direction in which to search for the displaced beds, though we must remember that we know of no means of ascertaining the *amount* of displacement; unless, of course, we are acquainted with the other beds, or know the general character of the faults of the district. The rule is, that if the fault is dipping *from* you, you have to go downwards; the beds have as it were slipped down the inclined plane, and *vice versa*. Thus (Fig. 1) standing at *B*, in the bed *A*, *B*, the fault *E*, *F*, falls from you, and the displaced portion *C*, *D*, must be sought for *downwards;* or, again, standing at *C*, the fault falls *towards* you, and your search must then be upwards. Sometimes a little smut or coal is left turned down at the corners, to show in which way the movement has occurred; but this is not constant, nor is its indication always correct. Some curious exceptions have occurred to the general rule, one of the most interesting of which is in the district of Radstock, in the Somersetshire coal field, where the beds have, as it were, been forced *up* the inclined plane, probably by means of powerful lateral pressure.

Fig. 2.



It will be observed that while the general fault, as in Fig. 1, leaves an interval without coal, this exceptional fault (as in Fig. 2) for a certain distance actually doubles the coal. The case referred to has been described by Mr. GREENWELL, in the Transactions of the Northern Institute of Mining Engineers. There is one other irregularity I must caution you about—where a series of faults has brought portions of the same bed to the surface several times (Fig. 3); and in surveying, unless care were taken to observe the faults, it would be regarded as so many different beds of coal. Some years ago great disappointment was experienced in Ireland because a dislocation of this kind had not been observed, and the same bed was reckoned twice over.

Fig 3.



THE INTERNATIONAL EXHIBITION BUILDINGS.

Written for the Engineering and Mining Journal, by John A. Wilson, C. E

3.—MEMORIAL HALL.

THE Memorial Hall is located parallel with and northward from the Main Exhibition Building, in the most commanding portion of the great Lansdowne Plateau, 116 feet above the river Schuylkill, and overlooking the city, which is to the southward. The building is elevated in a terrace six feet above the general level of the plateau. It is constructed of brick, granite, iron, and glass, very little wood being used, and it is intended to be fire-proof.

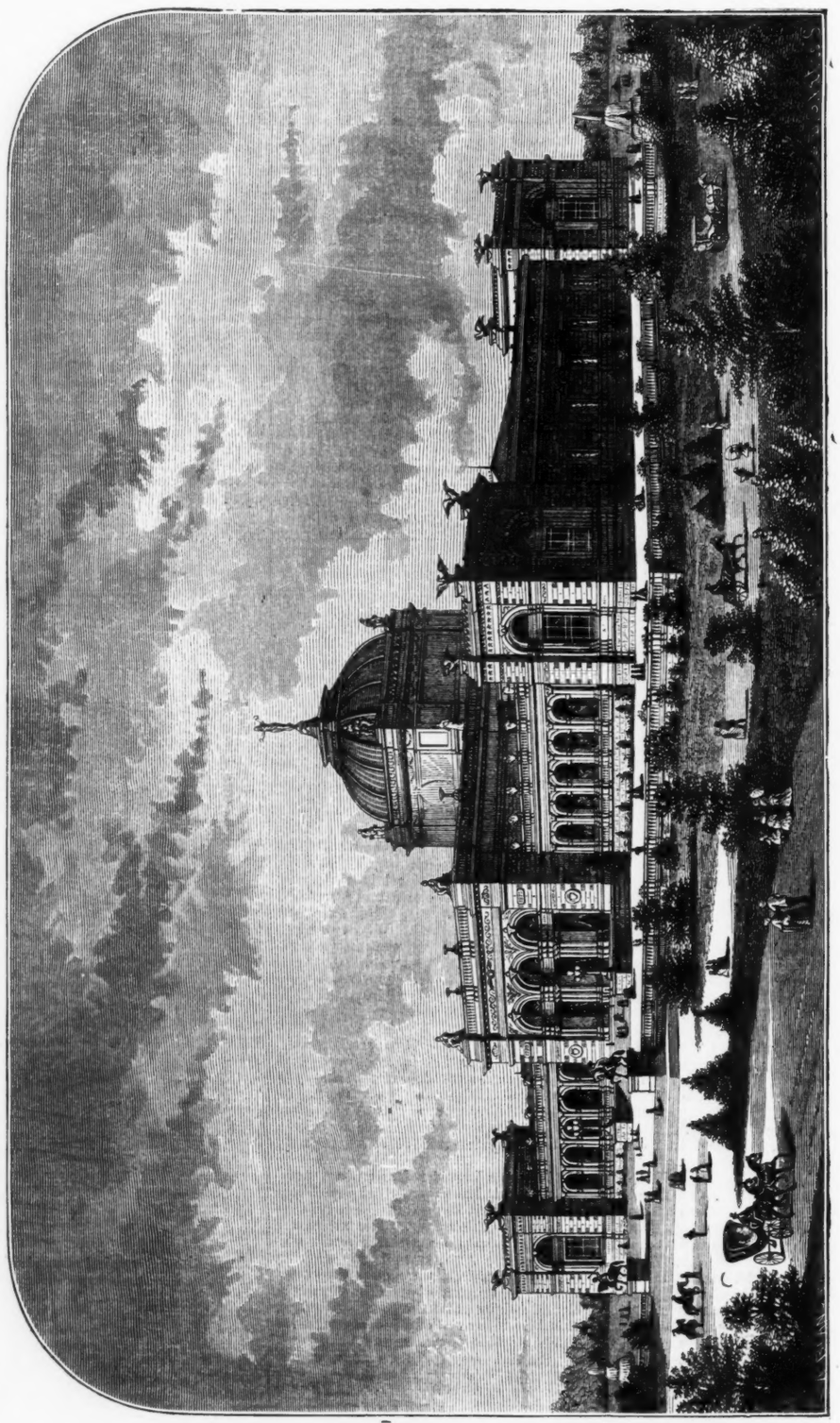
The general outline is a rectangle 365 feet long by 210 feet wide, at each corner of which there is a pavilion 45 feet square. The main entrance front, 95 feet wide, in the middle of the south side, projects about 10 feet from the lines of the rectangle; the north entrance front, of same width, ranges with the lines of the pavilions, the remainder of the outer walls on the four sides are retired about 6 feet from the lines of the rectangle above named. On the south face the spaces 90 feet long, on each side of the main entrance, and between it and the pavilions, are occupied by arcades about 18 feet wide, each of which consists of 5 groined arches supported on granite columns. In rear of each arcade there is an open garden plat 90 by 37 feet, back of which is the main wall of the picture gallery.

Approaching the building from the south, and having reached the level of the terrace, the visitor rises by thirteen steps of Quincy granite, to the entrance, 70 feet wide, formed by three arched doorways, each 15 feet wide by 40 feet high, and passes into the vestibule, which is a hall 82 by 60 feet, and 53 feet high, lighted from the transoms over the entrance doors, and by windows opening on the garden plats. On the further side of the vestibule, three doorways, each 16 feet wide and 25 feet high, open into the rotunda, which is 83 feet square, with height of 78 feet 8 inches to the highest point of the ceiling under the dome. On the east and west sides of the rotunda, and communicating with each by three doorways of the same dimensions as those on the south side, are the two main picture galleries, each 98 feet long by 84 feet wide, and 35 feet high, forming, with the rotunda, a hall 287 feet long. Beyond each main picture gallery, and connecting with it by three smaller doorways, is a small picture gallery 28 feet wide and 89 feet long. These small galleries, which occupy the east and west sides of the building, open north and south into private apartments connecting with the pavilion rooms at the four corners of the building, which rooms are about 35 feet square. North of the rotunda and main picture galleries there is a hall 287 feet long and 14 feet wide; the space between this hall and the north face of the building is occupied by 12 small rooms, one exit passageway, and two stairway passages. Over these small rooms there is a second story containing ten rooms, similar to those below. The stairways are extended beyond the second story to the roof, from which visitors can view the grounds. At the north entrance, outside of the building, there is a landing and flight of granite steps similar to those at the south entrance. There is a basement 12 feet in height under the main portions of the building.

The rotunda is lighted from the dome; the two main and two small picture galleries are lighted from the roof; the remainder of the rooms from windows in the sides of the building.

The exterior height of the various parts of the building above the ground are as follows:

Cornice of arcades	40 feet.
" " pavilions	58 "
" " main vestibule	64½ "
" " square finish round dome	94 "
Summit of dome arch	117 feet 8 inches.
Top of frame work under figure	134 "
" " figure in dome	157 " 6 "



MEMORIAL HALL.

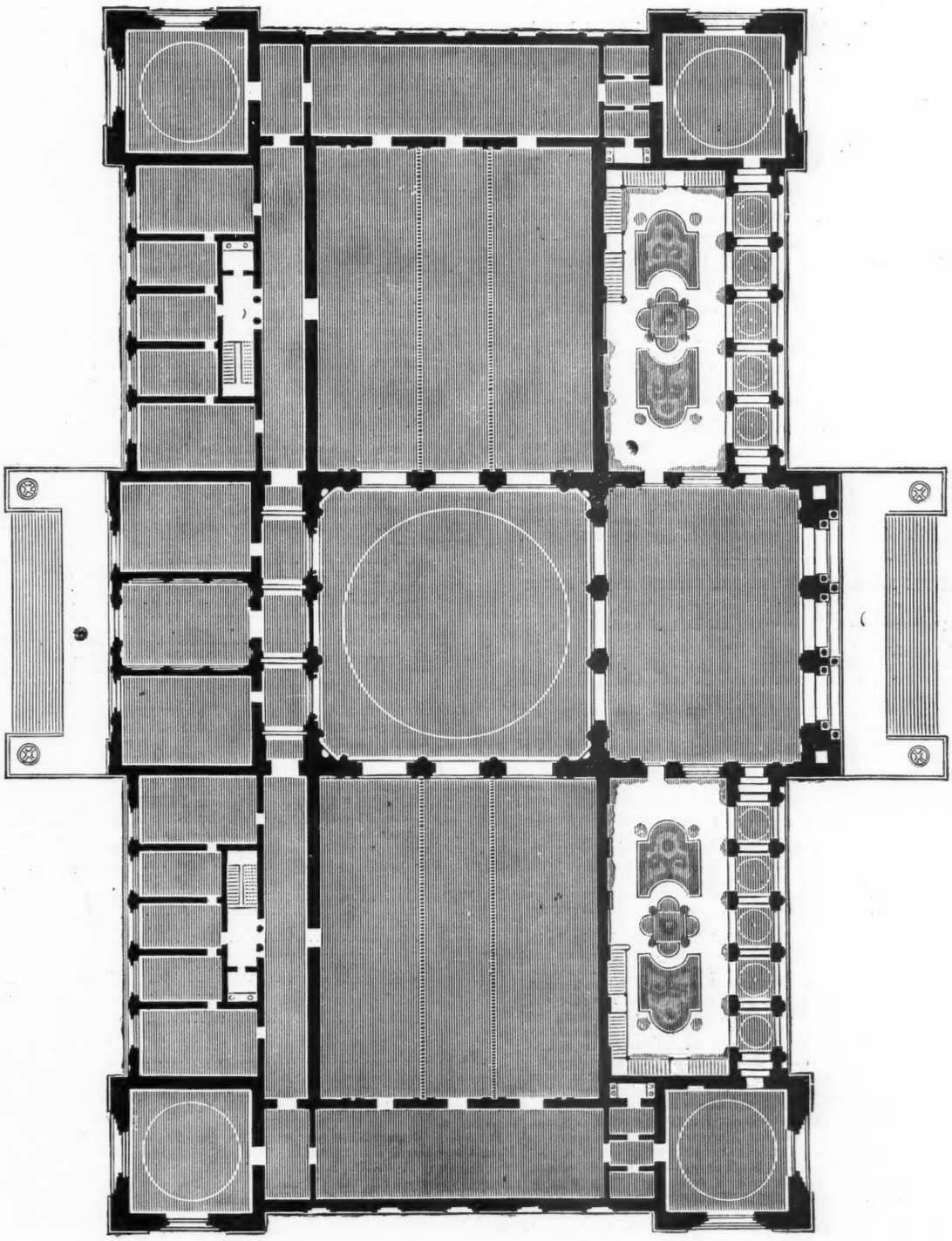
The foundations of the Memorial Hall are rubble masonry; the exterior walls are of Eastern granite, backed with brick; the interior walls are of brick. The granite work is dressed on the face, and cut to form the moldings, panels, columns, and other ornamental features, all of which are of solid stone. In the basement there are piers of masonry, level with the cellar floor line, on which rest cast iron columns 10 feet long, and with 7½ inches external diameter. These columns support wrought iron beams 12 inches deep, 5 inches across the flange, with spans between centers of columns of 13 feet 9 inches. Resting on these beams, and at right angles with them, are wrought iron beams 9 inches deep, 3⅜ inches across the flanges, and with spans, center to center of columns of 14 feet 6 inches. The beams in this upper course are spaced 4 feet 10 inches between center, brick arches are sprung between them, resting on their lower flanges, the brick work is backed up level with mortar, and on this is laid the marble tiling which forms the floor of the building. The floors of the second story rooms, on the north side of the building, are

formed of wrought iron beams, resting on the walls, with brick arches turned between the beams, and finished in the same manner as the lower floor.

The roof supports of the four pavilions and of the second story rooms are light boiler plate girders, those of the main vestibule are four wrought iron trusses. These roofs are covered with tin, resting on wooden purlins. The picture galleries are spanned by wrought iron trusses, which carry the roof lights of obscured rough plate glass ⅜ inches thick.

The arrangement of the dome is a peculiar one. The rotunda we have stated to be 83 feet square, and if the dome framework had rested on the main walls, its exterior dimensions would have been the same as those of the rotunda. In order to reduce the size and corresponding height of the dome, the plan was adopted of supporting the dome on four trusses, parallel with the walls of the rotunda, and 8 feet 6 inches distant from them. These trusses have clear spans of 82 feet 8 inches, length, out to out of chord 85 feet 8 inches, and depth 16 feet. The lower chords and carrying rods are upset links, with pin connections; the upper chords and posts are made of channel bars and plates riveted. These four trusses, which are stiffened laterally by anchorage to their respective parallel walls, form, by their intersections, a square, each side of which is 66 feet, and each truss is divided into 5 panels, giving 4 posts, exclusive of the end posts, over which are the footings for the dome ribs. The framework of the dome consists of 16 ribs, resting at their lower ends in the trusses, as above stated, where they are anchored by heavy stirrups, and meeting at the crown in a wrought iron ring 6 feet in diameter, and 3 feet deep, the whole forming, in plan, a square dome with the corners cut off. The ribs are constructed of wrought iron angles—plates and flat bars, riveted together, forming a truss; the eight corner ribs have a depth of 36 inches, the intermediate ribs have a depth of 30 inches.

From the top of the supporting trusses, the ribs are straight (but inclined slightly towards the interior of the building) for a height of 24 feet 4 inches, where there is a system of horizontal tie-rods connecting the two sides of the dome. From this point, which is the springing line of the arch, the vertical height to crown is 27 feet 11 inches, making the whole rise of the ribs 52 feet 3 inches. It being found necessary to secure additional strength to resist the wind pressure, a system of bracing rods was introduced, extending from the feet of the dome ribs on one side, to the branches on the other side, thus securely tying the parts of the frame together. A system of horizontal struts is introduced between the ribs at four points, and these, in addition to bracing the work, carry the iron framework for the glass.



MEMORIAL HALL—GROUND PLAN.

The interior, or false dome, is constructed of a light framework of wrought iron, footing on the supporting trusses of the main dome, and finishing at the crown in a ring, 12 feet 4 inches in diameter. At the crown of the main dome there is an iron framework to support the central figure, which figure is 23 feet 6 inches in height.

The dome is inclosed to a height of about four feet above the springing line of arch, and 94 feet above ground line, with a square frame work of wrought iron covered with galvanized iron, which is surmounted with a balustrade, and presents ornamental features at each corner, where there is a large figure.

Around the whole building, above the cornices of the roofs, there are ornamental balustrades of galvanized iron attached to wooden supports, which are anchored to the masonry by iron straps. On each corner of the pavilions there is a large eagle, and on other prominent portions of the roof there are figures, vases, etc.

The interior of the building is plastered and finished with various cornices, moldings, and designs in plaster. The heavy cornices, moldings, etc., are formed by setting up light iron frames, or pieces of sheet iron cut with the proper profile, and which have small holes punched along their outer edges. Through these holes were passed light iron rods, keyed in their places, and to these rods was attached wire netting, which takes the place of lath, and on which the plastering was done. The ceiling of the rotunda is formed on a complicated system of wrought iron traming, which furnishes the desired outlines. The interior finish of door frames, casings, etc., is black walnut oiled. The ceilings of the picture galleries are formed of glass set in wooden frames, which are suspended from the roof trusses, thus admitting the light which comes from the skylights in the roof. The building is heated by steam supplied from boilers in the basement, and is furnished with the necessary supply of gas and water.

As the Memorial Hall is a permanent building, intended to commemorate the Centennial of the nation, and supposed to show our advance in architecture, it has been and will be subjected to more or less criticism. The building has been constructed in a surprisingly short space of time considering its extent, and it now has the misfortune to be surrounded by many other, and some larger buildings. It will probably show to much better advantage, when the temporary Centennial buildings are removed, and it commands the position. It might have been in better keeping to have constructed the dome the full size of the rotunda, and thus increase its height, instead of purposely reducing the size, as we have previously explained. The effect of an immense central hall—proposed to be formed by the rotunda and picture galleries—has been lost by the necessity for constructing partitions across the doorways, and in the picture galleries to secure wall space. Improvements might have been made in the lighting of the studios in the second story, in the ventilation of the building, and in the designing of the iron construction. It is not within the province of this article to discuss these points, we have therefore confined ourselves to a description of the building as it is. A reference to the accompanying views of the Memorial Hall will assist our readers in following our outline of the plan and general appearance of the structure.

IRON ORES OF BRITISH NORTH AMERICA AT THE INTERNATIONAL EXHIBITION.

Special Correspondence of the Engineering and Mining Journal.

ONE of the most significant illustrations of the value of the long continued geological survey of Canada to that country is seen in the large and varied collection of ores and other materials which is now on exhibit in the Canadian Department, Main Building.

A large proportion of this display is made up of iron ores from various portions of the Dominion, and those from the more important mines or localities will be noticed in this paper.

The proximity of the Canadian territory to our own on the Great Lakes, which latter afford such easy and cheap means of transport for heavy or bulky materials, and also the comparatively recent development on a quite large scale of the coal deposits in Nova Scotia, on the east, and Vancouvers Island on the west, have stimulated the search for and exploration of the Canadian iron ore deposits.

That portion of the Dominion lying to the east of Lakes St. Clair and Huron, is in the main made up of geological formation belonging to the older periods, and, in consequence, as would naturally be expected, many of the ores found are magnetites and hematites. Limonite of various kinds and spathic ores exist as quite valuable deposits, both in Nova Scotia and along the banks of the St. Lawrence.

By turning to a map of Nova Scotia we see that the Bay of Fundy, in its extension to the east, divides into two forks which gradually narrow down until they end in the mouths of small rivers. The lower one of these forked inlets has, lying towards its north-eastern extremity, the territory where the ores used in making the celebrated Acadian iron are found. What is called the Cobequid Hills of Londonderry, and which run from west to east along the north shore of this inlet, contain deposits of ore varying very much in character. The country rock is of the Upper Silurian formation and careful investigation seems to show that metamorphism has changed what were once deposits of siderite and ankerite, into peroxidized ores. These deposits occur in veins which cut the layers of gray and black shales, which latter are interstratified in places by quartz bands, the general strike of the whole being east by north. These carbonate ores have been so diversely chained that they often occur as mixed magnetites, hematites, limonites, and spathic ores. Very little seems to have been changed into magnetite, however, and that only when intermingled with hematite. One specimen sent by the Steel Company of Canada, which now owns the Acadian properties, is a soft reddish ochery ore from what is called the Peter Totten Mine. This ore has undoubtedly resulted from the decomposition of spathic ore, proof of which is found in the rhombohedral forms of crystals which yet remain, and from the subjoined analysis.

Another hematite ore is found in the same vicinity, which contains much more iron, one analysis showing 67·85 per cent. Neither of these ores, however, have been much used in the Acadian blast-furnaces, owing to the abundant supplies of easy reduceable limonite ores, which are found in the vicinity. These ores, like the hematites, seem to have generally resulted from the decomposition of the carbonates of iron which occur in the Cobequid Hills. This limonite ore is found at various points along the veins, alternating, or mixed with hematite and siderite.

In some cases the one has only been altered to a few feet in depth, when in other places, as at the Martins Brook Mines, near Londonderry, the workings have been carried down to a depth of two hundred feet without finding anything except limonite. A specimen sent from the above mine is a dull, heavy, brown, honeycombed mass with reticulating walls of hard limonite, the cavities being filled with ochery material of a light yellow color. Other specimens of limonite from mines in the same vicinity are stalactitic and botryoidal in form with very little gangue mixed with them. Some of these specimens when broken show a fibrous silky fraction. The following analysis, columns II., III., IV., and V., show the character of these ores:

	I.	II.	III.	IV.	V.
Fe_2O_3	69·86	84·73	82·65	82·13	79·68
FeO	....	traces	traces	1·00	none
MnO	2·25	0·23	0·25	0·72	2 51
Al_2O_3	traces	0·23	0·56	0·66	0 63
CaO	11·70	0·14	0·15	0·88	0·57
MgO	0·42	0·14	0·10	0·25	0·34
SiO_2	0·07	....	....	1 93	3·05
CO_2	9·20	....	....	....	....
P_2O_5	none	0·19	0·38	0 86	0·44
SO_3	0·04	0·01	0·02	0 04	0·01
H_2O Hygroscopic	1·33	0·33	0·31	0·44	0·78
H_2O Combined	5·74	11·07	10·51	11 07	11 65
	100·61	99·74	99·72	99 98	99·66
Fe	48·91	59·31	57·85	58·27	55·77
P	....	0·083	0·166	0·37	0·192
S	0·15	0·004	0·008	0·016	0·004
Insoluble residuum	....	2·67	4·79	2·05	3·040
Specific gravity	....	3·98	3·91	3·77	3·31

II. Ross's Farm Mine. III. Martin's Brook Mine. IV. Cumberland Brook Mine, North Vein. V. Cumberland Brook Mine, South Vein. For fluxing these ores a dolomitic limestone, containing some iron, is used, a specimen of which is on exhibit. Physically it is a light gray mass, crystallizing in the rhombohedral forms peculiar to spathic ores. By exposure the iron becomes peroxidized, giving the surface of the mass a rusty appearance. The following analysis shows its composition:

Ca CO_3	54·00
Mg CO_3	22.00
Fe Co_3	23 20
Si O_2	0 50
	99·70

This ore is found to flux very well in the charcoal furnaces where it is used. Looking again at a map of Nova Scotia, we see lying to the east of the Londonderry district Pictou with its surrounding coal fields. The East and Cumberland Rivers which flow into Northumberland Strait, near Pictou, skirt ranges of hills along which have been found very valuable deposits of hematite ores. One of these hematite ores from the McLellan Mountain Mine has the following analysis:

Fe_2O_3	75·67
MnO	0·52
Al_2O_3	·45
$CaCO_3$	2·44
$MgCO_2$	·98
P_2O_5	·22
S	·29
FiO_2	trace
SiO_3	19·43
	100·00

This ore occurs in the Clinton formation and in physical characteristics resembles the hard fossil ores of the same period as are found in central Pennsylvania. The place on the vein from which the specimen of ore analyzed was taken shows a uniform quality of ore having a thickness of fifteen feet. Another specimen from the East River, near McGillen's Mountain, contains 43 per cent. of iron.

From the Sutherland River district several specimens of spathic iron ore are on exhibition. Physically they are made up of dark gray fine grained crystals. This ore occurs in a bed between rocks of the Millstone Grit formation. As far as explored the bed shows a thickness of from six to ten feet. The analyses of the ore given below, show it to be of a very good quality.

	I.	II.
Fe_2O_3	10·98	..
$FeCO_3$	65·61	88·48
$MnCO_3$	7·98	1·85
$CaCO_3$	2·67	2·34
$MgCO_3$	3·23	5·82
SiO_3	3·76	1·51
Hygro. Moisture	·76	..
Sulphur	none	..
Phosphorus	·013	..
Organic matter	traces	..
	101·03	100·00
Fe	43·56	42.71

A number of other specimens of hematite and limonite ores are shown from the same district. The beds from which they were obtained, although not worked as yet, will become quite valuable in case the Pictou coal is applied to smelting iron.

From New Brunswick specimens of ore, found at Woodstock, are sent. This deposit was traced many years ago by Prof. JACKSON of Maine, from the Aroostock region in that State, to the St. John's River at Woodstock. The general strike of the Upper Silurian rocks in which it occurs is north-east. This ore, which is a mixture of hematite and limonite, is found interstratified with clay slates, the beds varying in thickness from six inches to eight feet, the average being about three and one-half feet, and their number being variable. This ore, of which no analysis is given, contains besides the oxide of iron carbonate of iron, from one to six per cent. of manganese, and is often seamed by thin layers of graphite. The mine from which the specimen is sent, is at Jacksontown three miles from Woodstock on the St. John's River. 40,000 tons of ore have been taken from this mine to supply charcoal furnaces near by which are now abandoned.

Many of the magnetic ores found in Canada are highly titaniferous and at various times attempts have been made to smelt them. At Bay St. Paul's on the upper St. Lawrence, about sixty miles west of the mouth of the Saguenay River an immense deposit of this titaniferous ore is found occurring in anorthosic rock of the Laurentian series. This bed is in places 90 feet thick. It looks

like a compact hard coarse-grained magnetite. Its chemical composition, as shown by an analysis of Dr. T. S. HUNT, is given below.

Fe_2O_3	10·42
FeO	37·06
MgO	3·60
TiO_3	49·60
	99·68

In 1873 the Canadian Titanic Iron Co. erected two charcoal blast furnaces, and attempted to smelt this ore. The effort was successful but as it required from 190 to 200 bushels of charcoal to the ton of iron produced, the enterprise was soon abandoned. With such a high percentage of titanic acid as the above analysis shows, it is hard to understand why this ore was ever employed for iron making.

Sixty-five miles west of Quebec, on the St. Lawrence occurs the mouth of the Three Rivers. A short distance above the juncture, two river beds of bog iron ores are found and worked in blast furnaces by the St. Maurice Forge Co. These bog ores, which are found in the alluviums of recent formation, occur as reddish brown or yellowish honeycombed masses, and when fractured are sometimes dull and again highly lustrous. Most of the ore is found in concretionary masses sometimes several feet thick, but generally only a few inches. The following analyses of St. Maurice ores are by Dr. T. STERRY HUNT:

	I.	II.	III.
Fe_2O_3	77·60	74·30	64·80
Mn_2O_3	0·30	traces	5·56
Al_2O_3	..	..	..
SiO_2	5·40	3·60	4·80
P_2O_5	1·81	1·80	undet.
Volatile matter	17·25	22·20	23·65
Fe	54·32	52·01	45·36

These fossil ores are very easily reduced in the blast furnaces, both on account of their porous nature which readily admits the reducing gases, and also on account of the considerable percentage of carbonaceous matter which they contain. The high amount of phosphorus which they generally hold, has the effect of producing white or mottled iron in the furnaces. Some of the bog ores which are found in the St. Maurice Beds, are almost free from this element, and produce a perfectly neutral iron.

The County of Vaudreuil, which lies at the junction of the Ottawa and St. Lawrence Rivers, contains beds of ore of the same nature. The specimen exhibited contains over 50 per cent. of iron, and but little manganese. At Cote St. Charles in the same county, the beds of ore are sometimes as much as eight feet thick. In St. Angelique and St. Elizabeth occur concretionary masses of these ores, which are highly manganiferous as shown below:

Fe_2O_3	40.96
$Mn\ O_3$	26.31
$Ca\ O$	1.48
$Mg\ O$	traces.
P_2O_5	.60
$S\ O_3$	traces.
Insoluble	12.08
H_2O and organic	17.97
	99.43
Fe	28.67

In the townships of Hull and Templeton, opposite the City of Ottawa, there are two important mines, which have sent specimens of their ore. One of these mines contains magnetic ore, while the other is a hematite deposit. The magnetic ore is hard and crystalline, and contains in places small scales of graphite. The following analyses show its composition.

	I.	II.	III.*
Fe_2O_3	73.90	93.82	66.20
FeO			19.78
Mn_3O	none.	0.12	traces.
Al_2O	.61	0.79	
CaO	....	0.45	1.85
MgO	1.88	0.94	0.18
P_2O_5	0.027	0 08	0.015
S	0.085	0.11	0.28
CO_2	....	....	1.17
SiO_2	20.27	3.75	11.11
H_2O	3.27		
Graphite	....	....	....
	100.042	100.06	99.295
Fe	53.51	60.19	62.52

This ore occurs in a bed, having in places a thickness of 90 feet, the inclosing walls of which are composed of syenitic gneiss, interstratified with white crystalline limestone, holding mica and graphite. This mine was opened in 1854, and after about 8,000 tons had been shipped to Cleveland, Ohio, it was, for the time, abandoned, owing to the discovery of other mines nearer the St. Lawrence.

A mine of hematite ore, at Haycock Location, in Hull Township, about ten miles from Ottawa, was opened by the Ottawa Iron and Steel Company in 1872-3. The specimen sent from this mine shows it to be a specular ore of very great purity, having a slight admixture of magnetite.

The following analyses of the ore are by Prof. CHAPMAN, of Toronto:

	I.	II.
$Fe_2\ O_3$	88·08	85·45
Fe O	6·86	5·24
$Fe\ O_2$	3·17	2·12
Mn. O	·24	0 15
Mg. O	·13	0 17
Ca. O	·55	0·41
$P_2\ O_5$	·16	0 13
S	·03	·35
Graphite	·35	·28
Insoluble	·26	·77
	99·83	100·07

This ore, like the magnetite just described, occurs in beds surrounded by rocks of the Laurentian formation. The country rock is a highly feldspathic gneiss. The beds range in thickness from a few inches to several feet at the surface, which frequently widen out very rapidly as they go down. The ore is now used to make iron by the Catalan process.

The country lying to the north of Kingston, on Lake Ontario, which is geographically included by the townships of Dalhousie, North and South Crosby, and Bathurst, contains many valuable deposits of hematite and magnetic ores. The only specimen sent from this district is from the Dalhousie Mine, which lies about 12 miles west of the town of Perth. The ore is a very beautiful hematite, occurring in a tremolitic dolemite. The mine, when opened in 1866, seemed to consist of two beds, separated by limestone; but the smaller of these, on working, was soon found to give out. The larger deposit was in places as much as 9 feet thick at the surface, and at a depth of 80 feet it has an average thickness of four and five feet. The bed dips to the south-east about 60°. This ore was shipped to Cleveland, Ohio, for a number of years, about 4,000 tons having been sent to that point. The ore was shipped by the Ridau Canal to the St. Lawrence, and thence by the Great Lakes to its destination, the freight costing in 1873 $4.60 per ton.

* Mixed magnetic and hematite.

About fifty miles north-north-west of Kingston, is another region lying in the same range as that containing the ores just described. This district includes the townships of Mamora, Madoc, Belmont, and Seymour. Specimens of ore from the Seymour ore bed, in Madoc Township, are purely granular in appearance, containing no pyrites, and but little other gangue. Its analysis, by Dr. T. S. HUNT, is as follows:

$Fe^2\ O_3$ / Fe O	89·22
P	00·012
S	00.073
Insoluble	10·42
	99·725
Fe	64·61

In 1837 a furnace was erected near this bed, but its distance from water or rail communication was too great, and after a short campaign it was abandoned. The Grand Junction Railroad now passes near this, and there is a prospect that the mines will again be opened. The rocks in which this bed occurs are on one side soft mica schists, and on the other reddish gray feldspars, which are porphyritic in places. A number of specimens of magnetite ores from other deposits in the same township are also exhibited, the beds not having as yet been worked to any extent. Several fine-looking specimens of magnetite ore from the Snowden Iron Location, which lies in Snowden Township, about 80 miles north-east of Toronto, are exhibited. The one has a granular, somewhat porous structure, its chemical nature being shown by the following analysis of an average sample:

$Fe^2\ O_3$	58·35
Fe O	24·87
$Al^2\ O_3$	0·42
Ti O_1	0·73
Mn O	0·13
Mg O	2·56
Ca O	1·43
Si O_3	11·17
$P_2\ O_5$	0·17
S	0·04
	99·88
Fe	60·18

This mine has been worked considerably lately, the ore being brought out on the Toronto and Lake Nipessing Railroad, which runs to within fifteen miles of the mine. The ore was carried to Cleveland, Ohio.

Leaving the Laurentian rocks, in which the magnetites and hematites of Ontario and Quebec Provinces are found, there is a strip of country north of Lake Huron and Georgian Bay, the formation of which belong to the Huronian series. Both magnetites and hematites are found in these rocks, a number of specimens of which are on exhibition. Several pieces of magnetite from near Killarney, on the north shore of Georgian Bay, show the ore from this locality to be quite pure, an analysis giving 60.85 per cent. of iron, no titanium, and but traces of phosphorus and sulphur. The main bed is about twenty feet thick, and is flanked on one side by diorite, and on the other by quartzite.

A bed of hematite occurring at the extreme northern end of Lake Huron, where it narrows down to form the entrance to Qua-me-naw Bay, has recently been discovered. Specimens from this deposit show it to be a close-grained massive ore, containing about 56 per cent. of iron, with no appreciable quantities of phosphorus and sulphur.

The series of Nipigon copper and silver-bearing sandstones and ferruginous limestones which occur at Thunder Bay, at the head of Lake Superior, have recently been found to contain quite important beds of magnetite and hematite ore. A fine-grained magnetite from McGregor Township, near Thunder Bay, occurs in irregular masses in these Nipigon rocks. Specimens of fine-grained compact hematite and botryoidal kidney ore from the Silver Lake Mine, Thunder Bay, are exhibited.

This deposit, which is about five miles north of Thunder Bay, is in some places from forty to fifty feet in thickness. These ores have been analyzed by Dr. ELLIS, of Toronto, who finds them to contain from 68 to 69 per cent. of iron. The outcrop of these beds is elevated from four to five hundred feet above the Lake, and is well situated for mining and shipping. Abundant forests in the neighborhood would furnish charcoal for smelting the ore at the mines. Specimens of impure clayey ore from the Saskatchewan River are shown, the nature and occurrence of which are not described.

The geological surveys which within the last few years have been made in the region through which the Canadian Pacific Railroad will pass have resulted in some quite important discoveries of valuable minerals. Texada Island, which lies in the Georgian Strait which separates Vancouver's Island from the main land of British Columbia, has been found to contain a very valuable bed of nearly pure magnetite ore. This ore, of which two very fine specimens are exhibited, is a dark gray massive magnetite, which frequently contains small cavities filled with red or yellow ochres; sometimes these cavities are lined with octahedral crystals of magnetite. A partial analysis of these ores shows them to contain 68.40 per cent. of iron, and 1.003 of phosphorus. This deposit occurs in crystalline rocks, supposed to be Devonian. The largest outcrop of the ore is on the south side of the island, and is there from 20 to 25 feet thick. This bed rests on crystalline limestone, which contains thin bands of interstratified ore. This bed has been traced for a distance of several miles toward the northward.

For mining and shipping, this ore is very favorably situated. Furnaces erected at the mines could obtain abundance of charcoal from the neighborhood, or coal from the coal fields of Vancouver's Island, about twenty miles distant, might be used. This locality may at no far distant day supply the pig iron market of the North Pacific Coast, as water communication direct from the mines would make the cost of transportation very small.

THE ENORMOUS COAL PRODUCTION OF GREAT BRITAIN.

THE British Mine Inspectors' Reports for 1875, which have just appeared, show that, notwithstanding the depressed condition of trade in England during the past year, the already immense production of coal in 1874, still further increased during 1875, by 6,716,377 tons, or about 5¼ per cent. increase for the year.

The amount of coal raised in 1875, was 133,306,485 tons; in 1874, 126,590,108; in 1873, 128,680,131.

The number of deaths from mine accidents was considerably larger in 1875 than in 1874, though the total number of persons employed was several thousand less. It would seem that the low price has stimulated the consumption of coal, and enabled England to export more largely, while the reduced wages have made the men more industrious, the output per man being largely increased. We fear also, that this desire to do a large amount of work, has made the men more careless. We shall next week give the particulars of these statistics, in convenient form for reference and comparison.

MINING TOOLS AT THE PHILADELPHIA EXHIBITION.

Special Correspondence of the Engineering and Mining Journal.

THE Hardy Patent Pick Co., of Sheffield, England, exhibits a very fine collection of picks and handles in the English Department of Machinery Hall. These picks, curiously enough, were invented in 1869 by C. A. HARDY of Philadelphia. Their manufacture on a commercial scale has however only been carried on in England, and after five or six years of successful working there, they are now brought back here to serve as a proof that England is not always conservative in adopting a good foreign invention, even though it may not have been appreciated at home.

The original invention of Mr. HARDY consisted in the fitting of a malleable iron socket piece to the feather of the handle in which the pick was fastened by a set screw, it being made solid without an eye. The pick as now made fits in a similar malleable iron socket, but instead of being held in place by a set screw, it is secured by a steel wedge and cotter which bears up against the under side of the pick. The pick is slotted on the upper side, and is pressed up by the wedge, so that it is firmly held by the top of the socket. This form of handle is much used with light straight mining picks, and is said to work well. When it is necessary to frequently sharpen the picks, this form is specially valuable, both on account of the readiness with which they are removable, and also because the cost of making these heads is less than with those having "eyes." Another form of pick which is made by the Hardy Co. has a long iron ferrule on the feather of the handle which is split on both sides for some distance from the top. When the pick is driven on in the ordinary manner the ferrule contracts at the slit slightly, its elasticity helping materially to keep the pick firmly fixed in its place. A third form of handle is made with a solid ferrule on the feather, the ferrule being recessed on one side in which fits a slightly tapering half round wedge. An ordinary eye pick, when driven on this kind of ferrule, is firmly held by this taper wedge. A change in the size of the wedge makes it possible to use picks having different-sized eyes on the same handle. All the picks made by the Hardy Co. are of solid cast steel, and are polished. Their exhibit includes almost every variety of mining poll and ordinary pick used in this country, and also special kinds of handles. Where it is necessary that the latter should be quite short, they are made with long iron ferrules, which give them the weight possessed by longer handles.

THE VERONA PICKS.

These are made by the Verona Tool Works of Pittsburg, Pa. Several specimens of these picks are to be found in the collection of manufactured steel products exhibited by the Crescent Steel Works of Pittsburg in the Main Building. The picks are made of solid steel from the Crescent Works, which fact is a sufficient guarantee of the good quality of the material out of which they are constructed. The Verona Company make a variety of these picks for mining and other purposes, the different forms of which are illustrated in the advertising columns of this journal.

One noticeable feature in these picks is the substitution of a tubular cheek to the eye which makes the picks hold much more firmly to the handles than do those which have the old-fashioned pointed cheek.

KLEIN, LOGAN & CO. PICKS.

This firm makes a very good display of their goods in the Main Building, among which are quite a number of mining picks and sledges. Some of these are made of solid steel and in the construction of the eyes and their general finish, they are much like those made by the Verona Company.

INTERNATIONAL EXHIBITION OF 1876.

Special Report of the Engineering and Mining Journal.

ADMISSIONS FOR THE WEEK ENDING JULY 4, 1876.

Date.		Paying Visitors.	Press, Complimentary, and Exhibitors.	Total Visitors.
Previously reported		999,315	471,381	1,470,696
June 28	43d Day	23,590	11,114	34,704
" 29	44th "	27,034	11,412	38,446
" 30	45th "	24,540	11,620	36,160
July 1	46th "	26,410	11,419	37,829
" 3	47th "	47,787	10,208	57,995
" 4	48th "	46,290	9,934	56,224
Totals		1,194,966	537,088	1,732,054

VERONA TOOL COMPANY'S PICKS.

Attention is invited to the Advertisement of the Verona Tool Company's Picks on another page. These tools are in quality and price worthy the attention of all having use for mining or railroad picks, or other mining tools.

CONVERSAZIONE OF THE INSTITUTE OF MINING ENGINEERS.

THE meeting at the rooms of the Centennial Commission of the American Institute of Mining Engineers, on Thursday evening, June 29th, which concluded the session of the general meeting of the Institute, was quite well attended. Prof. RITTER VON TUNNER, of Leoben, Austria, who had just arrived in this city, and Mr. I. LOWTHIAN BELL were among those present.

Dr. T. STERRY HUNT gave a short description of the geological structure and ore deposits of the country through which the excursion of the Institute had lately passed. Dr. HUNT, in speaking of the iron ores of Eastern Pennsylvania, said there were three general geological formations from which iron ores were obtained. The first is the older gneissoid formation, in which some considerable deposits of magnetic ore have been discovered within a few years. The more important of these beds are found in the great South Mountain, near its southern termination at Reading. Another class of magnetic ores, which are associated with more or less copper, occur in the mesozoic red sandstone formations. The most important of the deposits of this ore at present known, is the Cromwell Bank, which was visited on Tuesday (June 27). The ore, which occurs in an almost solid mass, is surrounded by trap dykes, which dykes have, apparently, protected it to a great extent from eroding influences. Estimates which have been made show that there is, probably, 64,000,000 tons of ore above water level, and recent borings have shown that to depths of 200 to 300 feet below the water level, the character of the deposit remains the same. The third class of ores found in Eastern Pennsylvania are the brown hydrated ores which are found in the lower Devonian limestone of the Lehigh and Lebanon Valleys. These ores, although not as rich as the magnetic ores just spoken of, are found in large quantities and play a very important part in the iron making of the section of the State in which they are found. Dr. HUNT, in speaking of the coal region, said that in considering the value of coal formations, their superficial area often gave very delusive ideas as to the amount of coal which they contain. The three small basins of anthracite coal which are found in Eastern Pennsylvania, will, probably, furnish as much coal, owing to the great thickness of the seams, as bituminous coal areas of much greater extent in the West.

COAL-CUTTING MACHINERY.

AT the last meeting of the South Staffordshire and East Worcestershire Institute of Mining Engineers, Mr. THOMAS PARTON, F. G. S., read a paper on the above-named subject. He said:

Exactly four years ago, when there was experienced a great want of men at a high rate of wages, there was a lively attention paid to the important question of the practicability of using machinery for the purpose of cutting (or holing) the coal seams.

This operation in coal mining being the most costly and the absolutely necessary one, and the proper working of the mine being so dependent upon the regularity of this labor, and there arising at times so much difficulty in getting the men to work their quota of time in anything like regular periods, it became a matter of serious consideration whether or not these coal-cutters could be economically applied to the varied circumstances of the varied seams of coal in the country. In order to elicit information on this question as to what had been accomplished in this direction, the writer visited several collieries in the North. As a result of that inspection, a paper containing full particulars of a machine known as WINSTANLEY & BARKER'S was read at an ordinary meeting of the Institute on June 3, 1872. It will not be requisite to reiterate those particulars, as the circumstances under which the same machine is now working at the same colliery, as seen by the writer a few weeks ago, is doing equal duty, to the satisfaction of the company. Four years' regular work in a seam of from 25 to 28 inches—a seam that cannot be worked profitably by hand labor on account of its hardness to hole—is a good test of the practicability of a coal-cutting machine.

This cutter, I may say, has for two years' average cut at a rate of 25 yards per hour with a pressure of air of 22 lb. The machine requires but minimum repair, and is worked by a Staffordshire man at a rate per ton. The economical results are most favorable, both as to cost of labor and proportion of round coal to small.

Mr. HYSLOP, the author of the new work on "Coal Mining," seems to have given minute attention to the working of coal-cutters. In his work he gives a detailed report of the duty done by Messrs. BAIRD'S cutter. It says: "It seems clear, therefore, that in suitable seams and circumstances, machines will give steady work, improved coal, and reduced costs."

"Not having worked a Winstanley machine, I cannot speak so definitely of its performance, but judging from the experience at Barleith Colliery (where two Bairds and a Winstanley have been working together), and our experience at Cobinsham, I am inclined to think that the Baird is inferior to the Winstanley in the following points: 1. It requires more power. 2. It is more unwieldy. 3. It is more troublesome to adjust. 4. It requires extra labor."

"While in these points it seems inferior to Winstanley's, the two years' working in a very hard seam at Barleith has shown its superiority in the following points: 1. In being reversible. 2. In its cutting power."

In consequence of the strike existing in parts of Yorkshire where other cutters are used, we have not been fortunate enough to inspect them at work, but very courteous letters have been received, offering every facility for inspection, and containing various particulars. One refers to a machine called the GILLOTT and COPLEY patent, which is in work at several collieries in the North. This machine is adapted for any seam of 24 inches and upwards, and can arrange its cutters at any level, as the circumstances of the seam may require, and is self-acting.

It is made principally of steel and wrought iron; the frame is of angle iron, about 5 feet 4 inches long by 2 feet 4 inches wide, on which are fixed two cylinders 7½ inches in diameter, with a 9-inch stroke, working on to a crank shaft, which by a simple contrivance drives the pinion, which gears into the the slots of the cutter wheel.

The wheel is of cast steel, 3 feet 10 inches diameter, and makes six revolutions per minute; on its outer edge are fixed 26 cutters, thus giving 120 strokes per minute, making an undercut of 3 feet 4 inches by 2½ to 3 inches thick; the cutters are 4 inches long by ¾ inch square. Its self acting or propelling arrangements are by a wire-rope passing round a snatch-block fixed at one end of the face to be holed, and working round a small drum fixed at the front end of the machine, which is actuated by a ratchet wheel and lever worked by an adjustable crank.

The top of the machine is covered by a plate of sheet iron to prevent the roof from falling among the working parts. A fair average work with this machine is reported to be about 25 to 30 yards long by 2 feet 4 inches wide, with a pressure of air of 27 lb. In one economic aspect this cutter is doing good service—

in producing a large proportion of round coal. Out of every 100 tons of hand-hewed coal, 3 feet 4 inches thick, 50 tons only of round are produced, the remainder being small, while the same quantity produced by the cutter gives 75 tons of round to 25 of small.

It should be needless here to state that the adoption of any kind of machinery which is calculated to supersede manual labor in the working of our mines is a desideratum devoutly to be wished for. When we consider the vast and marvelous transformation which has taken place in all our industries on the surface in the application of machinery, the valuable and intricate work which has been accomplished, and the wonderful strides of progress made, as the outgrowth of this application, we almost wonder that the busy world below ground, presenting its labors under such disadvantageous conditions, has gone so far without utilizing the same inventive power which has done so much on the surface.

Although a few attempts have been made in this direction during the past 30 years to apply machinery to do the work of the collier in cutting the coal, it is only of recent date we can say it is both practical and economical to use coal-cutters under certain circumstances. It is for the mining industry to ascertain those favorable conditions, and apply as a means to extend such appliances as will lessen the risk of property and life, and increase the output of our fuel to cheapen its extraction.

After further inspecting the working of these machines, it is our intention to be more definite in defining under what circumstances these coal-cutters can be advantageously used.

MINING NOTES FROM CALIFORNIA, COLORADO, MICHIGAN, MONTANA, AND UTAH.

CALIFORNIA.—*Dutch Flat Forum*, June 29.—*The Swamp Angel Mine* in Nevada County is worked entirely by drifting, at least a mile of tunnels having been driven, the longest being over 1,200 feet. They are now taking out splendid paying blue gravel, as a panfull washed in our presence amply testified. The bank of gravel now in sight where they have breasted out will furnish all the work they will need for the next 20 years. If we can judge from appearances and the results of their work in the past, this is one among the best drift claims in this mining district.

The Green Valley Mining Company is progressing rapidly with the shaft, which is now down 30 feet, and still in quicksand. The water which drove them out at 15 feet is kept under control by a cast iron pump worked by an overshot wheel. They will reach bedrock in about 10 or 15 feet more. The Superintendent, V. SOUDER, was under the impression that there was another channel further in the hill, so accordingly sent men to work running a tunnel in bedrock. He was correct. At 72 feet they ran through the bedrock into a channel of washed gravel which prospects well in fine gold; the depth of this channel is not known yet but is supposed to have been the main river bed at one time.

The Hidden Hill Mining Company made another partial clean up recently, the result being over 100 ozs. of coarse gold. They have still considerable bedrock to clean which will pay well. Their dividends this year will be large.

The Coal Mine in Siskiyou County.—Owing to the great quantity of water coming into the shaft lately sunk on the coal mine of MCCONNELL & CARRICK, south of town, it is hard work to go down any further, hence it is the intention of the owners to commence boring, towards prospecting it, in hopes of finding a coal bed that will justify the great expense of running a tunnel to drain and work the mine. All the prospects of coal taken out, on trial, proves to be of excellent quality, and it is firmly believed that the great quantity of water in the shaft comes from a bed of coal. Old coal miners in this section all agree that the indications are favorable towards further developments.—*Yreka Journal*, June 14th.

The Soulsby Mine, in Tuolumne County, is credited with the production of $20,000 in May from 1,200 tons of quartz. The mine has rich ore in a narrow lode broken by faults, and its yield has for that reason been interrupted on several occasions for long periods.

The Hadlock Mine, at Mosquito, Caloveras County, lately crushed forty-six tons of rock in GARLAND'S mill. The quartz paid $8.50 per ton. Two shafts have been sunk on the mine, seventy-five feet deep, and a level driven connecting them. The ledge averages about three feet and a half in width and will all pay for crushing. The mine is not supplied with machinery for working to advantage.

Ventura, California, Oil Wells. The oil wells near Ventura, it is said, are about to furnish at the wharf 1,500 barrels per month, soon to be increased to 5,000. A refinery is being erected in Ventura City.

COLORADO.—*Central City Register*, June 28.—*Judd & Crosby Reduction Works.*—The silver shipment of these works at Georgetown, from January 1st to June 17th, had a coin value of $107,386.99.

ALEXANDER & Co. of the Native Silver Lode at Caribou are about to build a mill for the treatment of ores from that vein.

Young American Lode.—It is expected that nearly $30,000 will be taken from this lode, which is in Clear Creek County, during the month of June.

The Burleigh Tunnel is again being driven forward, and is now over 1,850 feet long.

The St. Louis Mine is taking a prominent rank among the bullion producers of Gilpin County. Twenty-five stamps have been secured at the Gregory mill.

The Bobtail Company keep their mills and 115 stamps employed.

The Bolthoff Pulverizer with the capacity of fifteen stamps, is running steadily in Russell.

The Aduddel and Searle Mines on Clifton Mountain are producing silver ore, carrying some gold and a large percentage of lead, that yields from $70 to $320 per ton.

Gregory Mine.—The ore vein in the bottom of this mine, 725 feet deep, is improving in size and quality.

The Treasure Lode on Mammoth Hill, an old discovery relocated by J. W. HOLMAN, is producing some very good ore, the last runs giving from 6 to 7 ounces of gold to the cord. The shaft is 55 feet deep and is covered by a shaft house.

Taylor's Dry Concentration Works.—A silver reducing mill containing five Bruckner cylinders is being added to these works at Georgetown.

Lake's Stamp Mill at Black Hawk has received an addition of five stamps and other improvements and is running steadily.

The Monmouth-Kansas mill will have its full compliment of 52 stamps at work before the close of the month.

COLORADO ZINC ORES.—The *Georgetown Miner* of the 1st inst. says: "A series of experiments is now being conducted here and in the East with the object of ascertaining the best method of utilizing the zinc in a large class of our ores. When this is ascertained, capitalists now interested in works for the treatment of zinc ores, will at once erect works in the valley, and render useful and profitable a metal which has hitherto been only a detriment to mill-men. A gentleman of large experience in handling the ores of this district, has agreed to furnish 4,000 tons per annum, carrying over 40 per cent. zinc, and from 20 to 100 ozs. in silver. We trust that success will crown this enterprise, for it is of great importance to every citizen of this town and country."

MICHIGAN.—*Duncan Silver Mine.*—The following statement has been issued to the stockholders of the Duncan Silver Mining Company, which is located on the north shore of Lake Superior: "Explorations," says Wm. M. Courtis, M. E., manager, "on your property during the past year have confirmed the opinion expressed in my report of last Spring, that there was a belt of paying ground extending entirely across the property; but the richness of this ground has far exceeded my expectations. A winze has been sunk from the surface to the first level in this belt of ground, and cross-cuts and stopes opened upon it. From here, exceedingly rich ore in bunches has been taken (the largest containing 300 lb. A No. 1 ore), and in addition the leaders carry good stamp work the entire distance. There have been produced 1¾ tons of the richest grade, above $2 000 per ton, and 20 tons of No. 2 about $45, and a larger amount of poorer material of which no account is taken; the result of the work of only a few men, the larger number being engaged in exploration and openings. The amount of ore now developed ready for stoping and treatment, between No. 2 Eastern opening, is about 6,000 tons, at a safe estimate, that will assay $25 to $50 per ton, as shown by the work already done, while the chances are favorable for striking larger bunches of rich ore in the undeveloped ground. The cost of treating the above ore, including mining and smelting, will not exceed $10 per ton. A surface opening, 230 feet west of No. 2 shaft, shows the leaders extending in this direction, and at surface have every indication of proving as rich as at the winze, native silver showing at this point. We have now developed sufficient ground above the first level to insure the return of cost of mill, mining and treating all ore, and leave a large surplus for continuing explorations in depth. I would, therefore, recommend the purchase of a small mill, which will cost about $20,000, for concentrating all grades of ore. The explorations in depth have been driving the second level east and west of No. 3 shaft, and sinking shafts 2 and 3 each a lift of 60 feet. The latter has now reached a depth of 250 feet. All that can be said of this work is that no silver has been found in the green slate, but the vein at bottom of shaft has every evidence of continuing, and there is nothing to prevent striking good ore at any point. I do not look for ore until there is a change of country rock, but so long as the vein has such a favorable appearance, there is every reason to believe success will attend explorations in this direction also."

In view of the very favorable statement of Mr. COURTIS, the Directors have thought it advisable to raise the means to equip the mine with facilities for realizing from the product of ore now within reach. For this purpose a small stamp mill and concentrator will be needed. They therefore called a special meeting of the stockholders, which was held at the company's office on the 15th ult.

Silver Mining Company of Silver Islet, L. S.—A correspondent advises us that the same rock has been found containing graphite and silver, south of the main shaft on the 90 fathom level, in this mine, that proved so rich above, and the captain thinks he is just on the back of another large deposit of ore.

The Milwaukee Iron Company have taken a twenty year lease of the Breen Mine, Lake Superior Region. This, together with the Quinesaik and Breitung Mine leases, betokens a large degree of confidence in the region on the part of the Milwaukee Company. They have caused a thorough examination of the district to be made by experts.

WEST MOUNTAIN MINING DISTRICT, UTAH.—*The No-You-Don't* and *Nez Perces Chief Mines* work with 80 men, producing over 100 tons of ore daily; value $21 per ton. The mines are owned by the old Telegraph Mining Company, with Prof. HOLDEN of Cleveland, as Manager and chief owner.....*The Montreal Mine* ships 50 tons daily. .....*The Grecian Bend* works 25 men, shipping 20 tons per day.....*The Neptune and Kempton Mines* are working a few men only, in the lower works, with fair prospects.....*The Spanish Mine* works with 25 men, shipping 20 to 25 tons daily..... *The Aladdin, Owyhee, Albino, Live Yankee, and Bully Boy Mines*, situated at the head of Bingham Cañon, ship ore of a much higher grade than any other Mine of the District.....*The Revere and Yosemite Mines* work 50 men each, and produce 30 to 35 tons per day each.....*The Hamlin Mine* has a nice body of rich ore in sight..... *The Winnamuck new Shaft* is down to a depth of 250 feet, and produces very good ore under the able management of PINEDO, Esq.

AMERICAN PARK CAÑON.—*The Miller Mine* has made some time ago, connection between the Mormon and Lady Annie tunnels, representing a length of 1,500 feet; the Mine produces rich ore and is in a fair way to regain its old reputation.....*The Sunday* works with 12 men, producing 350 bushel of ore. The character of the ore has changed from a gold to a chloride of silver, assaying 350 bushels per ton..... *The Russler* has a 25-feet vein with 2½ feet of 80 bushel ore.....*The Silver Dipper* have their tunnel in over 200 feet.....*The La Belle* exhibits a 3-feet vein of 67 bushel ore.....*The Lost Maid* is working vigorously on a 5-feet vein of fine galena..... *The Bredemeyer* has a 3-feet vein of 47 dollar ore.....*The Wild Dutchman* works 20 men, producing 15 to 20 tons daily.

OPHIR.—*The Miner's Delight* has an immense body of ore in sight, and produces 30 tons of carbon ore per day.....*The Gray Rock* works with 40 men, shipping 25 tons of ore daily. The above said two mines are under Mr. LONGMAID'S able management. .....*The Monarch, Douglass, and San Joaquin* ship little but high grade ore steady. .....*The Pollicot* works on a 5-feet lode of chloride ore.....*The Wild Delirium Mines* ship 10 tons of good ore daily.....*The Lion Hill Mines* pour out fine ore steady day after day.

DRY CAÑON.—*The Mono* have retimbered their Main Incline to a depth of over 540 feet, and shows at a depth of over 600 feet in the Main, and at a depth of 500 feet in the West Incline, ore of $200 value per ton.....The suit between the Mono and Magnolia Mines has been decided in favor of the MONO; each being separate and distinct ore bodies.....*The Queen of the Hills* ships 40 to 50 tons per day.....*The Plavilla* is pouring out handsomely.....*The Hidden Treasure* ships over 50 tons daily, and is building a tramway down to Jacob's City, and a new toll-road from there to the mouth of the Cañon, which is a distance of 1½ miles.....*The Deseret* is shipping small quantities of Kern silver ore.....*The Chicago* works 12 men on prospect.

STOCKLAND.—*The Southport Mine* is producing 50 bushel ore.....*The IXL Mine* works 8 men.....*The William Tell* produces a good quality of ore, and so does the *Manzanilla, Madison, Muscatine, Legal Tender, Black Diamond, and Bullion Mines*, each and all of them producing from 5 to 8 tons of ore daily.....*The Silver King and Miss Livingstone* have struck a fine body of rich ore which they are rapidly opening.....*The Longmaid, Chicago, and Waterman Smelters* run all to their full capacity.

JAPANESE IRON MAKING.—The blast furnaces of Japan are small, and of very simple construction, although built on the same principle as those of Europe. The walls are built of fire-proof clay mixed with a few stones. The blast furnaces are round, and have an opening at the side, closed by a band of clay; opposite are two other openings, through which comes a strong current of air, driven into the furnace by Chinese bellows worked by men. Before pouring the ore into the furnace they mix it with coal, and subject it to a previous calcination, so as to rid it of its carbonic acid and sulphur. The Japanese do not understand puddling as practised in the West; but the principle of their procedure is exactly the same. The fused iron, mixed with a little sand and pieces of iron, is again fused with charcoal in a second furnace, when it is left to cool for several days, until the whole mass has the appearance of fluid. The Japanese method of making steel is quite different from that practised in Europe. They mix a quantity of iron in pigs and iron in bars, cover the mixture with borax, and melt the whole for a week in a small fire proof crucible. The borax serves to dissolve the impurities in the dross, which floats on the surface, and cooled, it is hammered hard, and alternately plunged into water or oil, after which it is cemented and tampered. The mode of cementing is as follows: The steel on coming from beneath the hammer, is covered with a mixture of clay, cinders, marl, and charcoal powder. When this plaster is dry the whole is subjected to a red heat, and the steel is afterwards cooled very slowly in warm water, which is allowed to become tepid. Steel thus obtained is not very supple, but extremely hard, because it is not properly tempered or completely freed from its impurities. It would not do for making watch springs, but isused by the Japanese for swords and sabers, which are tempered as many as eleven times, and knives, which are tempered four times.

CENTENNIAL EXCURSIONS FOR MINERS.—The Reading Railroad Company gave an initial excursion to the miners and their families, on the 5th inst., to the Centennial Exposition, furnishing them with transportation, entrance fee, and dinner in the grounds, free of charge. There will be, during the season, a sufficient number of these free excursions given to enable every miner in the Schuylkill region in the company's employ and his family to visit the Exhibition free of charge. The number of the excursionists were about 1,400.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending July 1.

Tons of 2,240 lb.	1876. Week.	1876. Year.*	1875. Week.	1875. Year.*
Wyoming Region.				
D. and H. Canal Co	52,152	920,256	69,817	1,602,359
D. L. and W. RR. Co.	40,437	623,488	78,781	1,519,509
Penn. Coal Co	23,428	431,922	28,977	634,901
L. V. RR. Co.	19,447	43,982	24,183	466,826
P. and N. Y. RR. Co.	151	12,-57	3,84	56,714
C. RR. of N. J.	125	550,514	48,558	290,355
Penn. Canal	14,123	136,661	3,707	10,092
	154,863	3,117,380	257,917	4,520,756
Lehigh Region.				
L. V. RR. Co	75,304	1,066,943	15,665	217,074
C. RR. of N. J.	30,921	531,978	11,140	18,780
D. H. and W. B. RR.	1,842	18,146	2,140	32,576
	107,167	1,617,067	28,945	268,430
Schuylkill Region.				
P. and R. R. RR. Co.	158,589	1,905,990	151,433	854,877
Shamokin & Lykens Val.	18,148	378,630	33,345	548,700
	176,737	2,284,620	184,778	1,413,637
Sullivan Region.				
Sul. and Erie RR. Co.	37	26,351	—	5,557
Total	438,824	7,045,418	471,640	6,208,382
Increase	—	837,038	—	—
Decrease	32,836	—	—	—

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

Perth Amboy business:

	Tons.
Received for the week	22,851
Shipped for the week	18,315
On hand July 1	86,133

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Piedmont Railroads amounts to 291,294 tons, as compared with the corresponding period in 1875.

Belvidere Delaware RR. report.	Week.	Year 1876.	Year 1875.
Receipts of coal at Coal Port (Trenton)	9,305	100,920	206
" " " South Amboy	5,630	203,966	21,358
Shipments at Coal Port (Trenton)	4,521	95,021	196
" " South Amboy	11,262	204,006	98,712

Shipments of coal from James River, from January 1, 1876, to July 1, 1876:

	Cannelton.	Peytona.	Coal Valley.
January	2,447	..	..
February	1,479	1,563	150
March	550	1,825	..
April	3,168	758	2,206
May	4,123	2,210	2,363
June	3,499	1,392	1,327
Totals	15,666	7,648	6,046

	Blacksburg.	Clover Hill.	Totals.
January	830	..	3,277
February	1,506	930	5,528
March	..	1,285	3,660
April	746	525	7,403
May	670	1,000	10,760
June	330	575	7,123
Totals	4,082	4,315	37,757

Coal Shipped at Pictou, N. S, for week ending July 1 1876. .. 7,267 tons.
Previously exported .. 47,850 "
Total to date .. 55,117

The Production of Bituminous Coal for the week ending July 1, was as follows:

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md.	Week. Tons.	Year. Tons.
Tons of 2,240 lb	43 443	785,334
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	6,448	161,156
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	3,730	79,084
*East Broad Top	1,214	34,766
Clearfield Region, Pa.		
*Snow Shoe	583	28,278
*Tyrone and Clearfield	24,226	544,004
Allegheny Region, Pa.		
*Pennsylvania RR	4,836	100,001
Pittsburgh Region, Pa.		
*West Penn. RR	3,095	98,247
*Southwest Penn. RR	1,791	28,695
*Penn. & Westmoreland gas coal, Pa. RR.	20,166	371,162
*Pennsylvania RR	7,586	150,131

* For the week ending June 21.

The Production of Coke for the week ending June 21.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	..
Alleghany Region	..	..
West Penn. RR	614	22,447
Southwest Penn. RR	9,392	232,958
Penn. & Westmoreland Region, Penn. RR.	809	21,005
Pittsburgh, Penn. RR	3,284	94,065
Total	14,179	370,475

COAL TRADE REVIEW.

NEW YORK, FRIDAY EVENING, July 7, 1876.

Anthracite.

No improvement is noticeable in the demand for anthracite coal. This is not strange when we consider the number of mills that have stopped this week, many of which will not resume for months, although some will only remain idle for a short time. The first of July is a time appointed by many works to make repairs, take account of stocks, etc., and in the present condition of trade matters are not hurried much. In addition to this, rolling mills, nail mills, and that class of works make the warm weather an excuse for a few weeks stoppage, so that the present consumption of coal is very much below what it was a month ago.

It does not appear that anthracite coal is being "slaughtered" quite so much as a few weeks ago; nevertheless, prices, as a rule, are much below circular rates. Stocks do not appear to be reduced much, if any, and it is very probable that even a greater curtailment of production will have to be made during August than during June and July.

Bituminous.

There is but very little doing in this fuel—nothing worthy of note. The better class of Cumberland coals have been reduced in price, but this effort to increase business has had no perceptible effect. Some of the poorer coals from this region have been sold as low as $3.40 at Georgetown, and rumor says even lower. The better classes have sold down to $3.60, equivalent to $4.95 discharged in this city. These figures, with the existing rates of freight on the Cumberland and Pennsylvania Railroad, and with the high rates of wages paid miners and others, must be ruinous to the companies supplying the coal.

The bituminous interests have suffered somewhat this year from competition with British coals, which, in the absence of paying cargoes have been carried to this country and the West Indies as ballast. The shipments from Great Britain from January 1, to May 31, 1875 and 1876 respectively, were as follows to the countries named:

	1876.	1875.
West Indies	148 148	150,861
South America	288,316	308,348
North America	193,997	91,711

In former years the business done by our eastern mines with the Pacific coast and the West Indies was quite important, but this year it has been very meager. The shipments to the United States during the first five months of 1876, were more than double those of the corresponding period or 1875, to San Francisco alone, they show a gain of 36,507 tons or an increase of over 150 per cent.

Coal Trade of Philadelphia.

PHILADELPHIA, July 6, 1876.

This is the third of the four week's during which the production of coal is to be considerably curtailed. In the official language of the companies, it is called an absolute suspension of coal mining and transporting, but their returns indicate a business of about 150,000 tons during the week's stoppage. The supply of cars in the Schuylkill Region during last week, did not reach 40 per cent. of the rating, for the individual operators. It is very difficult to reconcile the action of the company, advancing coal on the 1st of July, and announcing a further advance of 15 cents per ton on the 1st of August, in order to induce consumers and dealers to buy more freely now, and holding back cars in the meantime, to prevent those who are anxious of saving the advance from receiving the coal they order.

The trade is not quite as dull as it was, and would show fair activity for this season of the year, if left to take its regular course. Many expect unusual activity during the Fall, but there is nothing to warrant such expectation. On the contrary, the large stock of domestic sizes held by the companies, and the small consumption by manufacturers, leave no chance for any great activity. Putting up prices already too high, acts as a damper instead of a stimulant, as intended. The Schuylkill Region is fast losing ground in the Eastern markets. It may seem increditable, that the Reading Company prefers to make their quota with kinds and sizes not wanted, and which have to be stored to assist those who have orders in filling them, but it is nevertheless a fact.

Freights continue very low. $1.10@1.15 to Boston and Portland, and 50c. to Richmond and Washington, with occasionally a shade less to Philadelphia.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$4 70	$6 00
" " at S. Amboy	5 50	6 00
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	4 25	5 75
Despard, West Va.	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	6 00
Fairmount, West Va., " "	4 35	6 00
Newburgh Orrel, Md. " "	4 50	6 00
Cannelton Cannel, W. Va.	....	10 00
" Splint, " at Richmond.	4 50	6 00
" Gas Coal at Richmond.	4 00	5 50
Peytona Cannel, W. Va. at Richmond	8 50	10 00
Manufacturing and Steam Coals.		
Cumberland, at Georgetown and Alexandria, Va	3 50@3 75	5 00
Cumberland, at Baltimore	3 65@3 80	5 25
Clearfield f. o. b. Canton, Baltimore	3 75@....	5 25

Rockhill Semi-Bituminous and Broad Top, at the mine, per 2,000 lb., 90, f. o. b. Greenwich, Philadelphia, per 2240 lb., $3 60@3 95, according to destination; at Amboy, 4 60; New York, 5 00.

Clearfield and Allegheny, "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, per 2000 lb., 90; at Greenwich, Phil., per 2240 lb., 3 75@4 25, according to destination; f.o.b. South Amboy, N. J., 4 75; New York, 5 25.

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	9/6@11/	6 50@7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	42/	18 00
" Gas Cannel "	28/	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	4 75
Caledonia, at Port Caledonia	1 50	4 25
Glace Bay, at Glace Bay	1 50	4 25
Lingan, at Lingan Bay	1 75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

* ***Wholesale Prices of Anthracite Coal for July, f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.***

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Lackawanna and Scranton at Hoboken and Weehawken	4 75	4 85	4 95	5 05	5 65	4 95
Pittston at Newburg	4 60	4 70	4 80	4 90	5 50	4 80
Wilkesbarre at Port Johnston	4 75	4 85	4 95	5 05	5 65	4 85
Plymouth, R. A.,	....	....	4 95	5 15	5 75	4 95
Susque. Coal Co. at Amboy W.A.	4 75	4 85	4 95	5 15	5 65	4 95
Kingston at Hoboken	4 75	4 85	4 95	5 15	5 65	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 25	....	5 05	5 05	5 65	4 95
Old Company's Room Run "	5 25	....	5 05	5 05	5 65	4 95
Sugar Loaf, Hobok. & Amb. "	5 25	....	5 05	5 05	5 65	4 95
Lehigh Coal Exchange "	5 25	....	5 05	5 05	5 65	4 95
Honey Brook Lehigh	5 25	....	5 05	5 05	5 65	4 95
Beaver Meadow at South Amboy	5 25	....	5 05	5 05	5 65	4 95
Schuylkill Coals at North 9th st., Brooklyn, L. I.†						
Schuylkill white ash	4 75	4 85	4 95	5 05	5 65	4 85
Schuylkill red ash	....	....	....	5 15	5 75	4 85
Shamokin white and red ash	....	....	....	5 25	5 75	4 85
Lorberry	....	....	5 85	5 85	5 85	4 90
Lykens Valley	....	....	6 30	6 30	6 30	5 35

* Contractor's prices are 20c. per ton less.

†The prices of Schuylkill coals for shipment from Philadelphia are 35c. per ton less than at Brooklyn.

‡ Boats towed by the D. & H. C. Co. at its expense to and rom New York harbor.

Per ton.

Freight from Hoboken and Weehawken to New York .. 40c.
" " Elizabethport & Port Johnston to N. York. 40c.
" " South Amboy to New York 30@55c.

Freight by the boats of the companies from Hoboken, Port Johnston, Weehawken, Rondout, South Amboy and Perth Amboy to New York City and vicinity 50c

Freight by the Pennsylvania Coal Company's boats from Newburg to New York 65c.

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$5 70	$6 00	$5 30
Lackawanna coal, in yard	5 70	6 00	5 30
Wilkes-Barre, delivered	6 25	6 75	5 75
Lehigh & Locust Mountain, del'd	7 00	7 00	6 00
Schuylkill Red Ash, del'd	7 50	7 50	6 00

The Cost of delivery for Pittston and Lackawanna coal ranges from 40 cts. to $1 10 per ton, according to distance from the yard.

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$18 00
Liverpool House Cannel " " "	22 00
American " " "	13 00
Cannelton splint, " " "	8 00
Cannelton block, " " "	8 00
American Orrel " " "	11@14
Red Bank Cannel " "	14 00
Cumberland " "	7 00

Baltimore, Md. July 6, 1876.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 72	$4 57
Broken	5 10	4 95
Egg	5 20	5 05
Stove	5 61	5 46
Nut	4 76	4 61
Shamokin. (red or white ash), and "Boston," free burning white ash,		
Egg	5 30	5 10
Stove	5 00	5 40
Lykens Valley, red ash,		
Egg and stove	6 15	5 78

From wharf or yard, wholesale, 50@75c. additional.

By retail, all kinds and sizes, per 2240 lb. $5 35@3 00

BITUMINOUS.

George's Creek, Cumberland f. o. b. at Locust Point 3 80@4 00
West Virginia Gas f. o. b. at Locust Point
Youghiogheny Gas, f. o. b. at Locust Point

Boston. June 26, 1876.

Coal is very quiet in the wholesale way, but with a fair amount of business doing from the yards, though at very irregular prices. The same system of cutting to a cash-down buyer of six or eight tons seems to prevail in the retail business as marks the C.O.D. traffic in cargoes. There is very little coal coming forward, in fact cargoes ordered seem to be delayed, probably with the idea of forcing a steady tone to our Boston market

The manufacturing concerns are buying in the most cautious way a cargo at a time, many of the largest being constantly in the market for the bargains in anthracite and bituminous that are offering.

FREIGHTS are lower, off from 2 to 5c. This is particularly noticeable at Georgetown, whence Boston charters on small cargoes at $1.40 have been offered.—*Commercial Bulletin.*

Buffalo, N. Y. July 6, 1876.

Reported by our Special Correspondent.

Deliv'red at	Elmira	Ithaca.	Syracuse	Rochester.		Oswego
	Afloat	Afloat.	Afloat.	Afloat	ret. del.	f.o b.
Grate.....	$4 05	$4 35	$4 50	$5 20	$6 45	$5 45
Egg.....	4 05	4 35	4 50	5 20	6 45	5 45
Stove.....	4 45	4 80	4 95	5 65	6 90	5 90
Nut.....	4 15	4 50	4 65	5 35	6 60	5 60

Delivered at	Erie.	Buffalo.			
	f.o.b.	Afloat.	f.o.b.	ret.	del.
Grate.....	$5 95	$5 45	$5 95		$6 70
Egg.....	5 95	5 45	5 95		6 70
Stove.....	6 40	5 90	6 40		7 15
Nut.....	6 10	5 60	6 10		6 80

Cincinnati, O. July 6, 1876.

Reported by our Special Correspondents.

Market nominal and dull, with prices same as last quoted.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	7½@8c.	——
Pomeroy coal "	5 @6c.	——
Kanawha " "	7 c.	——
Cannel coal, according to quality "	11 @16c.	——
YThe following are the retail prices delivered		——
Youghiogheny	10c.	——
omeroy	9c.	——
Cannel	14@22c.	——
Kanawha Semi-Cannel	10c.	——
Anthracite, per ton		10 50@11 00
Coke, at yard	7c.	——
Coke, hard and soft, delivered	9@10c.	——

Cleveland, O. July 6, 1876.

Specially reported by Messrs. BATES & MARTIN.

Herewith find quotations of our market:

Per ton of 2000 lb. f. o. b. vessels.

WHOLESALE.	For vessels,	On cars.
Youghiogheny Gas Coal	$4 10	$4 00
Cannel	4 25	4 15
Blossburgh	$5 00	$5 00
Briar Hill, Block Coal	3 50	3 25
Straitsville Coal Co., lower vein	3 00	2 90
" " " whole "	2 90	2 80
Hocking Valley	2 90	2 90
Massillon	3 00	3 00
Tuscarawas Valley	2 65	2 60
Columbiana	2 65	2 60

Office of CLEVELAND COAL EXCHANGE,
89 Seneca Street, June 3d, 1876.

PRICES TILL FURTHER NOTICE.

	1 to 10 tons.	10 tons upw'd.
Massillon, Brier Hill and Mineral Ridge, lump.	$4 50	$4 25
" " " nut	4 00	3 75
Straitsville Lower Vein, Hocking & Shawnee, l'p.	4 00	3 75
" " " nut	3 50	3 25
Del Carbo and Rich Hill, lump	3 75	3 50
" " " nut	3 25	3 00
Maple Hill, lump	3 50	3 25
" " nut	3 25	3 00
Columbiana, lump	3 25	3 00
" nut	2 75	2 50
Lackawanna and Wilkesbarre, egg and grate	7 50	7 30
" " stove	8 00	7 75
" " chestnut	7 75	7 50

No Anthracite coal to be sold for future delivery except it be subject to Exchange price at time of delivery.

H. E. CHUBB, Secretary.

Louisville, Ky. July 6, 1876.

Specially reported by Messrs. BYRNE & SPEED.

Please report our prices as follows:

WHOLESALE.	per bushel		per bushel
Pittsburgh	12c.	Pine Hill	—
Raymond City	9c.	Kentucky	8c.

RETAIL.	per bushel		per bushel
Pittsburgh	12c.	Peytona Cannel	20@22c.
Raymond City	11c.	Buckeye "	20c.
Pine Hill	13c.	City-made Coke	10c.
Kentucky	10c.	Anth., per ton, $10 00 to 10 50	
Screened ittsburgh per load			$3 00
Screened Raymond City			2 75
Pine Hill (Kentucky)			2 75
Cannel			$5 to 5 50

Milwaukee, Wis. July 6, 1876.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 00
Lehigh Prepared	11 00	Blossburgh	8 00
Lackawanna (all sizes)	10 00	Cannel	8 00
Pittston	10 00	Pittsburgh	7 00
Scranton	10 00	Steam coal	7 00

New Orleans, La. July 1, 1876.

Reported by C. A. MILTENBERGER & Co.

The coal market is still depressed, with plenty of coal offering, and no demand. Stock: 10 months' supply.

The stock on hand, July 1, was 219 boats, 20 barges, and 10 French creeks. The consumption during June was 15 boats, 5 barges, and 2 French creeks of Pittsburg, and 1 boat of St. Bernard. The arrivals were 50 boats, 20 barges, and 5 French creeks.

We quote:

Pittsburgh coal, retail, per bbl		....
" wholesale		30c.
" steamboats, per box		40c.
" to manufacturers, per bbl		45c.
" shipments, per hhd		$5 25
Anthracite, wholesale, per ton		....
" retail, "		12 00
Virginia Cannel, per bbl		80c.
Scotch " "		80c.
Mt. Carbon, wholesale, per bbl		....
" " retail, "		50c.
St. Bernard wholesale, per bbl		30c.
" retail, "		50c.

Richmond, Va. July 6, 1876.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$9 00	New River Bituminous,	$4 25
" semi-Cannel	4 75	Clover Hill Coal	4 00
Coalburgh Splint	4 20	James River Bitum	3 30
Lewiston "	4 20	" " Carbonite,	5 80
Kanawha Gas coal	4 15		

San Francisco, Cal.

From the *Commercial Herald*, June 29, 1876.

Imports from Jan. 1st to June 16th:

	tons.		tons.
Anthracite	7,622	Vancouver Island	44,045
Australian	31,089	Rocky Mountain	123
Coos Bay	18,933	Seattle	46,484
Cumberland	3,599	Bellingham Bay	10,820
English	10,831	Chili	1,050
Mt. Diablo	43,969		

The receipts continue to be very considerable from all parts, chiefly Bituminious. The arrivals for the week embrace 1,026 tons Coronel, per *Anita Delfina*, sold prior to arrival to the Gas Company; *Arkwright*, 1,930 tons Nanaimo; *Revere*, 1,250 tons Wellington; *Montana*, 1,100 tons Seattle; *Orpheus* 1,350 tons Nanaimo: *Gem of the Ocean*, 1,050 tons Seattle: *City of Panama*, 835 tons Wellington; *Swordfish*, from New South Wales, 1,083 tons; *Malay*, from same 1,070 tons. The market is weak for all descriptions. The repudiation of the so-called five-year contract between BERRYMAN and BACON results in a heavy suit for damages againt the Pacific Mail Steamship Company, but the weight of evidence seems to be decidedly in favor of the latter. The annulling of this contract. alluded to by us a week ago, is the occasion of considerable stir among resident dealers and agents of other Pacific Coast mines, and will no doubt result in the continuance of very low prices of Steam coals for months to come. As before published, English steam cargoes to arrive next autumn have been sold as low as $7@7.50. In presenting the annexed quotations, we remark that, in the absence of reported sales, the prices must be considered as more or less nominal; California (Mt. Diablo), $5.75 for screenings, $7.75 for coarse; Australian, $9@9.50, latter for Wallsend; Coos Bay, Vancouver, Bellingham Bay, Seattle, etc. $9; Anthracite, $12@14; Cumberland, $14@16—all for spot parcels.

Montreal. July 3, 1876.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per ton of 2240 lb.

Scotch Steam	$4 60	Cape Breton Steam	$4 00
Pictou "	4 50	Newcastle Smiths,	5 50

Anthracite at retail, per 2000 lb., delivered.

Egg	$6 70	Chestnut	6 40
Stove	7 15		

Toronto, Ont. July 3, 1876.

Chestnut	$7 25
Stove	7 50
Egg and grate	7 25
Bituminous coal for domestic use	6 00
" " steam	3 50@5 50
Lehigh Lump and broken	7 50
Blossburgh	6 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J. (117 miles), via Central Railroad of New Jersey	2 36	2 22	2 78	2 69	2 92
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	70
‡ Philipsburg, N. J., (46 miles)	89	75	1 31	1 22	1 45
Elizabethp't, (114 m) Pt. Johns., Hoboken & South Amboy, N. J., shipping and wharfage 35c. add.	2 00	1 85	2 42	2 33	2 56
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 3[illegible]	2 22	2 69	2 69	2 92
Jersey City, N. J., (121 miles) and New York, via L. V. RR.	2 30	2 16	2 63	2 63	2 86
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
‖ Trenton Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, (97 m.) for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From *Mauch Chunk* to *New York* (121 miles), (towing limits) and Jersey City† via Lehigh Valley RR. $2 14

From *Mauch Chunk* to *Philadelphia* (93 m.) via L. V. and L. and S. RR. and North Penn. RR 1 75

††From *Phillipsburg, N. J.* to *Hoboken* (84 m.) for shipment via Delaware. Lackawanna and Western RR., Morris and Essex Division 1 10

From *Lackawanna Junction* to **Auburn, N. Y.*, (191 m.) for shipment, via Southern Central R R. in connection with Pa. and N. Y. R.R. 2 41

From *Lackawanna Junction* to ‖*Weedsport* (201 m.), for *Rochester and Charlotte and Erie Canal* 2 47

From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.*. 2 50

‖ To this point for all places between Rochester and Buffalo the rate is 2 53

* The rate to this point for Syracuse is 2 08

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

† Transportation on Coal destined for re-shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

The distances in the above table are Computed from *Mauch Chunk*. From *Ashley* to *Mauch Chunk* the distance is 51 miles, and from *upper Lehigh*, 33 miles. From *Hazleton* 24 miles, and from *Penn Haven* 8 miles.

From *Wilkes-Barre* to *Perth Amboy* via the Lehigh Valley Railroad Company, the distance is 161 miles, and from *Mauch Chunk* it amounts to 106 miles.

Freights.

Per ton of 2240 lb.

PORTS.	From Philadelphia.	From Baltimore.	From Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me.	....	1 90	....	....
Albany	†80	...	...	....
Amesbury, Mass.	....	....	....	....
Bangor, Me.	....	1 60	....	90
Bath, Me.	1 45	1 45	1 50	90
Baltimore	....	....	....	....
Boston, Mass	1 15@1 30	1 45	1 50	1 00
Bridgeport, Ct	†1 00	1 35	....	60
Bristol, R. I.	....	....	....	80
Cambridgeport, Mass.	§1 25@1 35	....	...	90
Derby	....	....	....	....
Dighton	....	....	....	....
East Cambridge	§1 25@1 35	....	....	§90
Fall River	1 20@1 25	1 40	1 45	80
Hackensack,	*70	....	....	....
Hallowell, Me.	....	....	....	....
Hartford	*70	....	....	....
Hoboken	†70	1 25	1 30	40
Hudson	....	....	1 45	....
Jersey City.	70	1 25	1 30	40
Lynn, Mass.	....	....	....	†1 00
Middletown.	....	....	....	1 00
Mystic	....	....	....	....
Newark	71	....	1 45	....
New Bedford	1 15@1 25	1 40	1 45	80
Newburyport	1 30	1 60	1 65	1 00
New Haven	1 00	1 35	1 40	60
New London	1 20	1 35	1 40	65
Newport	1 15@1 25	....	....	80
New York	1 00†	1 30	1 35	40
Norwalk	1 00	1 50	....	60
Norwich	1 20‡	....	....	70
Pawtucket	1 25‡	....	....	....
Philadelphia	....	....	....	....
Portland	1 25	1 45	....	90
Portsmouth, N. H.	1 30@1 40	1 60	1 65	1 00
Providence	1 15@1 25	1 40	1 40	80
Poughkeepsie, N. Y.	....	....	....	....
Rockport.	....	....	....	....
Saco	....	....	....	....
Sag Harbor.	....	....	....	1 00
Salem, Mass	1 25@1 35	1 45	1 60	90
Salisbury Pt., Mass.	....	....	....	....
Stamford.	*70	....	....	60
Stonington.	....	....	....	80
Taunton.	...	...	....	....
Troy	†80	....	....	..
Warren, R. I.	....	....	....	80
Wareham	....	....	....	....
Weymouth.	....	....	....	....

* And discharging and towing. † And discharging. ‡ And towing. § 3c. per bridge extra.

Freights on Bituminous Coals from the Mines to Tide Water Shipping Ports.

From the Mines to Cumberland and State Line (say an average of 20 miles), the legal charge is 2 cents per ton of 2240 lb. per mile.

From State Line to Amboy (346 miles) $4 per ton of 2000 lb On coal shipped beyond this point there is a drawback of 75 cents per net ton.

From Cumberland to Baltimore (178 miles) $2.02 per ton of 2240 lb., or $1.80 per net ton (⅛ cent per ton per mile for use of hoppers over C. & P. RR.).

From Cumberland to Georgetown (152 miles) by canal, $1.10. Tolls, 46 cents.

From the Mines to Piedmont, 4 cents per ton of 2240 lb. per mile on distances less than 4 miles, and 3 cents per ton per mile on distances over 4 miles, and 2 cents per ton per mile on distances over 10 miles.

From Piedmont to Baltimore (206 miles) $2.34 per ton of 2240 lb., or $2.08 per net ton.

From Osceola to Greenwich, Phila. (say 248 miles) per T. & C, RR, per ton bituminous coal of 2000 lb., less drawback of $1.46. $2.15; rate per gross ton, $2.60.

From Osceola to South Amboy, N.J., (317 miles) per 2000 lb., $4.03, less drawback, $1.03; rate per net ton, $3; add 12 per cent. for gross ton, 36 cents, terminal expenses, shipping, 20 cents; rate per gross ton, $3.56.

IRON MARKET REVIEW.

New York.

FRIDAY EVENING, July 7, 1876.

American Pig.—We are reported sales aggregating about 1,500 tons of various brands at about our quotations. Although business continues dull, yet some of the furnaces have an over-supply of orders, especially for forge and No. 2 foundry irons, which are very firm. There appears to be a little better feeling among makers, yet there is nothing in the trade to warrant an advance of prices. Two furnaces are reported as preparing to go into blast, while another is to blow out. We quote No. 1 foundry at $22; No. 2 at $20@21; and forge at $19@20.

Scotch Pig.—We are reported sales aggregating 100 tons of Eglinton at $27@28. Business in Scotch iron is very dull, and the arrivals are larger than the sales. We quote Eglinton at $27@28; Coltness, at $30@30.50; and Glengarnock, $28.50@29.50.

Messrs. JOHN E. SWAN & BROTHERS (Limited), of Glasgow, under date of June 23, report 116 furnaces in blast as against 122 a year previous; stock of pig iron in CONNAL & Co.'s stores 64,038 tons (an increase of 515 tons during the week), as against 34,953 tons at the corresponding time last year; shipments for the week ending June 17, 7,626 tons as compared with 11,118 tons during the corresponding week of 1875; total decrease in shipments since Dec. 25 as compared with the corresponding period of 1874-5, 37,802 tons; quotations of No. 1 iron as follows: Gartsherrie, 65/; Coltness, 69/; Summerlee, 61/6; Langloan, 67/6; Glengarnock, 63/; and Eglinton, 57/; quotations of freights as follows: to New York, 3/6; Boston, 9/; New Orleans, 5/; Baltimore, 8/; Philadelphia, 10/; and San Francisco, 27/6.

Rails.—We are reported a sale of 1,000 tons on private terms. There continues to be some inquiries which are likely to result in business. We quote iron rails at mills at $39@42; and steel at $56@61.

Old Rails.—A sale of a lot of Erie section is reported, but it has no bearing on the regular market. We quote $21.50@22.

Scrap.—There is nothing doing in this article, which we quote nominally at $28.

Philadelphia Iron Trade.

Weekly report of the Philadelphia Iron Market, furnished by Messrs. JUSTICE, COX, Jr., & Co., Iron Merchants, 333 Walnut street, Philadelphia. Week ending July 6, 1876.

The week has been a quiet one as far as business was concerned. Almost all mills and foundries have shut down for the week, and some for a longer time. The heat and Fourth of July celebration, coupled with lack of orders, did much to make this general. There has been a very general inquiry for all grades of pig iron; but as prices are held firm, and, in some cases, an advance asked, the sales have been small. But all seem to think bottom about reached, and as soon as the business community settle down to business again, we will hear of quite a stir, if not some advance in prices; and this looks the more so as in the face of all iron works stopped, the inquiries come in thick and fast from all quarters. Good forge or mill irons are much sought, and very scarce at this time. We report sales of 3,000 tons gray forge Chickies private terms, and 500 tons Montgomery at $20. We quote No. 1 $22 to $23, No. 2 $20.50 to $21, gray forge $19.50 to $21.

BARS.—Nothing doing in bars, the mills being with one accord shut down. We quote 2·30c. to 2·35c. per lb.

RAILS.—Nothing to report in iron rails. We report sales of 500 tons; steel rails, $58.50 at mill.

Baltimore. July 5, 1876.

Specially reported by Messrs. R. C. HOFFMAN & Co.

We have no change to note in the iron market since our last report. We quote:

Baltimore Charcoal	$30@35	Anthracite No. 3	$20@21 00
Virginia Charcoal	28@34	Mottled and White	17@19 00
Anthracite No. 1	23@24	Charcoal C.B. Blooms	65@67 50
" No. 2	21@22	Refined Blooms	50@55

Boston. July 1, 1876

PIG hangs in a stupid way, with prices nominally steady, ranging from $21 to $25 for grades from gray forge to No. 1 foundry. The New York and Philadelphia markets continue sending over here very low and irregular quotations, the former adding the inducements of freights on small tonnage at $1.15.

BAR seems to have lost the stiffening tendency of the past two weeks, and closes in rather a flabby way for the advanced values we have been noting. There is very little business, and here and there a blacksmith of even doubtful credit is taken in on machine shop prices. We should quote $50@52 as free range to the market, and probably not covering the extremes at either end.

The nail association has issued a new tariff, under date of June 28, advancing common 10d. to $3.25; finishing 10d. to $4.50; box 10d. to $4. and cooper 10d. to $3.75; spikes, $3.50 and so in the usual relative differences through the whole card.

STEEL remains quiet and firm.

We quote American tool 14@15c.; American machinery 8½@9½c.; Bessemer tires 5¾c.; Sweet's excelsior tire, 7½c.; English Tool, 15½c. gold.—*Commercial Bulletin.*

Chattanooga, Tenn. July 3, 1876.

Specially reported by J. F. JAMES. pig iron broker, etc., 233 Market Street.

I have no change to report in the condition of our market since last report. Small lots are continually moving, but general business is far from encouraging.

The usual four months is given on quotations below:

Tenn. Ala. and Ga. Charcoal, No. 1 foundry	$21@ 22
" " " " No. 2 foundry	20@ 21
" " " " gray forge	17@ 18
" and Georgia coke, No. 1 foundry	18@ 19
" " " " No. 2 foundry	17@ 18
" " " " gray forge	15@ 16
White and Mottled	14@ —
Tennessee and Georgia cold-blast car wheel	24@ 25
Alabama " "	24@ 25
Old Rails, cash	22 00
Cast Scrap	" 12
Wrought Scrap	" 16

Cincinnati. July 3, 1876.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below please find closing quotations of our pig iron market, viz.:

CHARCOAL.

Hanging Rock, No. 1 Foundry	$25 00@		4 mos
" No. 2, "	23 00@		4 mos
" Mill	22 00@		4 mos
Tennessee, No. 1, Foundry	23 00@24	00	4 mos
Tennessee, No. 2, "	22 00@23	00	4 mos
" Mill	21 00@22	00	4 mos
Missouri, No. 1, Foundry	@		4 mos

STONE COAL.

Ohio, No. 1, Foundry	23 00@		4 mos
" No. 2, "	22 00@		4 mos
Ohio Mill	21 00@		4 mos
Missouri, No. 1 Foundry	26 00@		4 mos
" No. 2, "	24 00@		4 mos
" Mill	23 00@24	00	4 mos

CAR-WHEEL.

Hanging Rock, C. B	40 00@45	00	4 mos
Tennessee "	30 00@32	00	4 mos
Missouri "	32 00@35	00	4 mos
Alabama "	28 00@30	00	4 mos

BLOOMS.

Charcoal	60 00@	75 00	cash

SCRAP IRON.

Cast	50c.@	85	cash
Wrought	1 00@1	40	cash

Cleveland, Ohio. July 3, 1876.

Messrs. C. E. BINGHAM & Co., quote as follows:

Per gross ton, on four months' time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, Lake Superior Charcoal	27 00@
No. 2, " "	26 50@
No. 1, Anthracite	25 50@
No 2, "	23 00@
No. 1, Bituminous	25 00@
No. 2, "	23 00@
American Scotch, No. 1, Cherry Valley	27 00@
" " B—1, " "	26 00@
" " No. 2, " "	24 00@
No. 1, Massillon	26 50@
B—1, "	25 00@
No. 2, "	22 00@

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	27 50@
No. 4 " " "	27 50@
Nos. 5 and 6 "	27 50@

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	27 00@

FORGE IRON.

No. 1, Gray	22 00@
White and Mottled	20 50@

Louisville. July 3, 1876.

Specially reported by Messrs. GEORGE H. HULL & Co.

The usual time, four mos., is allowed on the quotations below:

HOT BLAST—CHARCOAL.

No. 1 Foundry, from Hanging Rock Ores	$24 00@26 00
No. 2 " " "	22 00@23 00
No. 1, Mill, from " "	20 00@21 00
No. 1, Foundry, from Alabama, Georgia and Tennessee ores	22 00@23 00
No. 2, Foundry, from Ala., Geor'a and Tenn. ores	21 00@22 00
No. 1, Mill, from " " "	20 00@21 00

HOT BLAST—STONE COAL AND COKE.

No. 1, Foundry, from Hanging Rock Ores	22 00@23 00
No. 2, " " " "	21 00@22 00
No. 1, Mill, " " "	20 00@21 00
No. 1, Foundry, from Ala. Ga. and Tenn. Ores	22 00@23 00
No. 2, " " " "	20 00@21 00
No. 1, Mill, " " " "	19 00@20 00
No. 1 Foundry, from Missouri Ores	— @ —
No. 2 " " " "	— @ —
No. 1 Mill, from Missouri Ores	24 00@25 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock Ores	35 00@40 00
" " Tennessee "	28 00@30 00
" " Alabama and Georgia Ores	28 00@38 00
" " Kentucky Ores	28 00@38 00

Milwaukee. July 3, 1876.

Iron remains much the same—sales small.

per ton of 2,240 lb.

Frankfort L. S. Charcoal, No. 1	$28 00
" " " No. 2	27 00
" " " No. 3, 4 & 5	25 00
" " " No. 6	25 00
Mil. Anthracite L. S., No. 1	27 00
" " " No. 2	26 00
Wisconsin Iron, No. 1	26 00
Mahoning Valley Bit's No. 1	32 00
" " " No. 2	30 00

San Francisco, Cal.

From the *Commercial Herald*, June 29, 1876.

The ship *George Broughton*, from Liverpool, brought us 3,852 bxs tin plate and large quantities of manufactured iron, etc. The *Canada* for New York, carried 100 tons pig lead. Sydney pig iron is very plentiful, and slow of sale at 19@20c. Scotch and English pig iron continue to be in large supply, and prices more or less nominal—say $30@32.50.

Richmond, Va. July 3, 1876.

Reported by ASA SNYDER, Esq.

Sales of iron are promptly effected as it arrives—but receipts continue so light that the business is dwarfed.

Virginia Cold Blast Charcoal Pig Iron						$27	to $33
" Warm " "						24	to 28
" " " Coke	"	"	1 X			23	to 24
" " " "	"	"	2 X			21	to 22
" " " "	"	"	3			20	to 21
" Anthracite 1 X						—	to —
" " 2 X						—	to —
" " 3						—	to —

St. Louis. July 3, 1876.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

Our market continues very "flat," but little doing. Prices same as last.

Montreal. June 27, 1876.

We continue to quote: Pig iron Eglinton and Clyde $19@20.00; Carnbroe $20 00@21 00; American $22@24; Summerlie and Calder $20@21; Langloan and Gartsherrie $21@22; Coltness $21.50@22.00; Hematite $27@28. Bar, per 100 lb., Scotch and Staffordshire, $2.15@2.25; best do., $2.40@2.50. Swedes and Norway $4.75@5.50; Low Moor and Bowling, $6.50@7.—*Monetary Times.*

METALS.

NEW YORK, FRIDAY EVENING, July 7, 1876.

Owing to the holidays of the early portion of the week business was not fairly resumed until yesterday, and the wants of buyers appear to have been extremely limited since then.

Gold Coin.—During the week under review gold has ranged from 112¾@111⅞, and closed at 112.

Bullion.—We have to notice a still further decline in silver, the quotations to-day being 47d. in London, 100@102 here and 18 per cent. discount in San Francisco. These figures show a decline from last week of 2⅛d. in London; 6c. here; and 3 per cent. in San Francisco, and a decline within a month of 4⅝d. in London; 12¼c. here; and 5⅛ per cent. in San Francisco. The market continues to be very weak, and no one expresses an opinion as to what figure will be the bottom. Gold is unchanged at par ($20.67 gold per oz.) to ¼ per cent. premium.

Copper.—For more than a week there have been rumors of a sale of 5,000,000 lb. of ingot copper for export. Although we are unable to confirm this, yet it is generally believed that it has either taken place or is under negotiation. The shipments abroad this year already amount to about 8,250,000 lb., and if the abovementioned sale is or shall be consummated, the total shipments for this year will amount to at least 15,000,000 to 17,000,000 lb., or about one-half of our production. The regular business of the week has aggregated about 150,000 lb. at 19¾c.@19⅞c. Our manufacturers continue to buy for only their pressing necessities regardless of price. The closing quotations are 20c.@20¼c. The latest cable quotations from London were £80 for Best Selected and £74/10 for Chili. One cause for the advance in our market is the firmness with which the large mining companies are holding and the scarcity of outside lots of spot copper.

Tin.—Cable advices to-day quote Straits in London at £75, and Singapore, $21.50. There is but very little doing in this market, and quotations, in gold, are as follows: Straits, 17¼@17½c.; L. and F., 17¼c.; and Banca, 21¼@21½c.

Tin Plates are very dull of sale and quoted in gold, per box, as follows: Charcoal tins, 6.75@$7.25 and ternes, $6.37½@6.62½; coke tins, $6 and ternes $5.50 @5.75.

Messrs ROBERT CROOKS & Co., of Liverpool, under date of June 22, say of tin plates: "In spite of decreasing production, so far buyers have not made any extensive movement, and though plenty of offers are floating round few large transactions have been put through. Meantime the unprofitable nature of prices, or more still, the absolute want of orders, is telling on the makers and we hear a pretty definite report of one failure among them, whilst rumor is also very busy with the financial position of other works."

Lead.—We are reported sales aggregating about 50 tons at 6¼c., gold. Considerable lead and bullion is arriving, and about 700 tons are *en route* from San Francisco. The market has rather a declining tendency. Foreign can be laid down here at about 6·70c., gold.

Spelter and Zinc.—Domestic spelter is very quiet, with sales as low as 7¼c., currency. Sheet zinc is dull at 8½@8¾c., gold.

Antimony is still quoted at 15½c.

Quicksilver.—The price here is 53c. gold per lb.; in San Francisco, 47@49c.; and in London, £8/15 per flask.

The San Francisco *Commercial Herald* of July 29, says; "There has been another break in the market, so that the article is now offered for sale to be delivered in

New York at 50@51c. The price here is nominal at 47@48c. The receipts are heavy, but the near approach of our national holiday is a severe check to business. This year's receipts are some 5,000 flasks greater than for the same period of last year, and the exports even more free. There are rumors afloat of monthly contracts for the year being made at 50c. but we have good reason to believe that they have been made "at the market price" for the year, whatever that may be. An offer to sell on contract was made to the reputed buyers of above at 49c. and refused.

FINANCIAL.

New York Stocks.

FRIDAY EVENING, July 7, 1876.

Business during the past week was restricted to four days, and, as usual, but little was done in these. The sales for the week amount to 22,068 shares, being 15,000 shares less than reported in our last.

The New Jersey Central Railroad.—This stock closed nearly 2 per cent. higher with aggregate sales amounting to 16,000 shares for the four days business. From the New Jersey Comptroller's annual report for 1875 we learn that the net earnings of this company for 1875 amounted to $1,432,808. This does not include the earnings, expenses or rentals of the Lehigh and Susquehanna Railroad but it will be noticed that the net earnings of the road proper are insufficient to pay the interest on the bonded debt, which amounts to $1,475,250 and are only equal to about 5¼ per cent. on the total debt.

The Chicago, Braidwood, and Southern Railroad Company has filed articles of corporation. The purpose of the company is to construct and operate a railroad from Chicago to Paxton, in Ford County, Ill. (which is the center of extensive coalfields), where the principal offices of the company are to be located. The capital stock of the company is $800,000.

Monigona Coal Company.—This company has declared a dividend of 3 per cent., aggregating $9,156.

Georges Creek Coal and Iron Company.—At a general meeting of the stockholders of this company, recently held in Baltimore, the following were elected to serve as the board of directors for the ensuing year: ALEX. H. STUMP, THOMAS WHITEBIDGE, JAMES J. FISHER, JOHN S. GITTINGS, AUSTIN JENKINS, THOMAS DEFORD, THOMAS W. LEVERING, SAMUEL P. TOWNSEND, and JULIAN F. ALEXANDER.

Bonds.—A very large business has been done in these, the sales for the four days amounting to $242,000, at generally lower figures. The transactions have been principally confined to dealings in the New Jersey Central Railroad convertible bonds, and the bonds of the Lehigh and Wilkes Barre Coal Company, guaranteed by the same company. A correspondent writing to the *Evening Post*, says, "In connection with the affairs of the Central Railroad Company of New Jersey, permit me to call your attention to the fact that the seven per cent. convertible bonds of that road are covered and included in its consolidated mortgage. The fact is not generally known, which accounts for the difference in price, the convertible bonds selling about five per cent. lower than the first consolidated mortgage bonds, when there ought to be no difference."

Delaware Lackawanna and Western Railroad. This stock has been comparatively quiet during the week only 2,400 shares having changed hands. The dealings have been made at prices generally lower than prevailed last week, the stock closing over 3 per cent. lower.

The Morris and Essex Railroad, shows the net earnings for the year 1875 to amount to $1,372,894. This road is leased in perpetuity to the Delaware, Lackawanna and Western Railroad at 7 per cent. on stock, with an assumption of all liabilities. The entire bonded debt 7 per cent. interest, so the sum of rental for 1875 amounted to $2,317,840, or $944,946 in excess of its actual earnings, which sum represents the loss incurred by the Delaware, Lackawanna and Western Company from operating the road.

Delaware and Hudson Canal Company. This stock is fairly active and closes at an advance of over one per cent.

Consolidation Coal Company. We note transactions in this stock aggregating some 2,500 shares during the week at 39¾ and 40 representing the only quotations finally closing at the higher figure which is unchanged as compared with our last. It is rumored that one of the Directors of this Company has sold out all of his interest in the same and resigned and also that the Baltimore and Ohio Railroad Company are supplying all of the short interest in this stock.

Quotations and Sales of Stocks and Bonds,

For the week ending July 7, 1876.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	—	—
Consolidation Coal Co	40	39¾	40	2500
Spring Mt. Coal Co	—	—	*53½	200
American Coal Co	—	—	*54	—
Maryland Coal Co.	—	—	*12½	—
Del., Lack., and West. RR. Co.	106¾	104½	104¾	2406
New Jersey Central RR. Co.	74¾	71½	73¾	16029
Delaware and Hudson Canal Co.	109½	104¾	106½	723
Quicksilver Mining Co. pref'd	—	—	—	—
" " " Common	14½	13¾	13¾	100
Mariposa Land & Min. Co. pref'd	10	8½	9	200
St. Louis & Iron Mountain RR.	19	18⅛	19	110
Lehigh & Wilkes-Barre Coal Co.	—	—	—	—
Total Shares sold				22068
Sales for the week previous				37464
Decrease				15396

* Nominal.

BONDS.

	Inter'st	Sales.	Price.
Del., Lack. & West. 2d M.	M. & S.	.....	... @ ....
" " " 7's Con'ble	J. & D.	...	.... @ ....
Cent'l RR. of N.J., 1st M, New	F. & A.	2,000	.... @111½
" " " 1st Cons.	.....	16,000	99 @102½
" " " Convert'le	M. & N.	113,000	98 @100
Lehigh & W.-B'e, Con. Guar'd.	.....	106,000	83 @ 87½
Am. Dock & Imp. Mt. Bonds.	J. & J.	....	100⅞@101¼
Del. & Hud. Can., 1st M., 1891	.....	2,000	.... @110⅜
" " " 1884	.. ....	.....	.... @ ....
" " " 1877	.....	.....	... @ ....
" " " Coup. 7's, 1894	.....	.....	... @ ....
" " " Reg'd 7's, 1894	.....	.....	.... @ ....
St. L. & Iron Mountain, 1st M	F. & A.	.....	... @ ....
" " " 2d M	M. & N	.....	.... @*79
Chesapeake & Ohio 6's, 1st M.	.....	.....	... @ ....
" " Ex. Coupon	.....	.....	... @ ....
Mariposa Gold Loan con. 7s.	.....	3,000	.... @103½
Total sales..		$242,000	

* Nominal.

Philadelphia Stocks.

PHILADELPHIA, Thursday Evening, July 6, 1876.

The dealings in Philadelphia stocks show a further decline in amount, though, with but a single exception, an improvement in prices. The total sales aggregate 16,659 shares, a decrease of some 3,100 shares compared with those of the previous week.

Reading Railroad.—This stock is firm at a slight advance, 5,624 shares representing the transactions for four days, being some 20,000 shares less than were sold during the six days previous. The announcement of the determination of the company to pass the July dividend on its common stock, amounting to $32,725,775, and which would call for a disbursement of about $818,144, having been anticipated from President GOWEN'S last year's report, does not appear to have influenced unfavorably the quotations. Mr. GOWEN'S statement of the business of the company for the last half year was well received by the stockholders, and it has inspired confidence in the management of the company. The preferred stock of the Reading Railroad Company amounts to $1,551,800, on which a semi-annual dividend of 3½ per cent. has been declared, payable on the 25th inst. This company, in accordance with the terms of the lease of the East Pennsylvania Railroad Company, will pay a dividend of $1.50 per share on the $584 800 stock of the issues to the East Pennsylvania Railroad.

Lehigh Valley Railroad.—Stock exhibits an advance. the general range of quotations through the week showing an improved feeling. The transactions have amounted to only 544 shares, which is some 2,000 shares less than we recorded in our last.

Lehigh Coal and Navigation Company.—This stock is lower by ⅞, and is comparatively the most active on the list, the sales reaching a total of 4,206 shares for the four days, against 5,079 shares dealt in during the six days previous.

Pennsylvania Railroad. No change worthy of remarks is noticeable in this stock, the business for the four days is comprised in the transfer of 6,285 shares with the range of quotations generally unchanged. It is rumored that the company are considering the propriety of establishing in London an office of their own under the immediate charge of one of their own officers. The shares and bonds of the Pennsylvania Company and of other corporations in which it is more or less interested, represent, about $81,000,000. The object of the agency is to give at all times to bondholders and others accurate information concerning the officers and condition of the company, Mr. EDMUND SMITH, second Vice-President of the company, has gone to London with a view to establishing the desired agency.

Minehill and Schuylkill Haven Railroad Company. This company has declared a dividend of 75c. per share payable on demand.

The East Mahanoy Railroad Company, announces a dividend of one dollar and forty-five cents per share, payable on the 15th inst.

The Saltsburg Coal Company, has declared a dividend of 3½ per cent. payable on demand.

The Lykens Valley Coal Company, will hold its annual meeting on the 13th inst.

The Mineral Railroad and Mining Company, will hold its annual meeting on the 13thinst.

Bonds exhibit a little better feeling, and we note slightly increased transactions.

Karthans Coal and Lumber Company. This company has levied an assessment of 3 per cent on the par value of their 1st mortgage bonds payable on the 20 th inst.

United New Jersey Railroad and Canal Company.—From the recently issued report of the Comptroller of New Jersey, we learn that the net income of these companies for 1875 amounted to $3,473,387. These "united companies" are leased to the Pennsylvania Railroad Company at ten per cent. on the stock and assumption of all liabilities. The latter company report that the result for 1875, including taxes, interest and dividends, amounted to $4,121,053, or $647,666 more than the net earnings, showing that the road only earned equal to 6¾ per cent. on its capital, instead of the 10 per cent. paid by the Pennsylvania Company.

Quotations and Sales of Stocks and Bonds,

For the week ending July 6, 1876.

STOCKS.

	Highest	Lowest	Closing	Shr's
Lehigh Valley RR. Co.	57¼	57	57¼	544
Pennsylvania RR.	52⅞	52⅝	52¾	5624
Reading RR.	44¼	44⅛	44⅛	6285
Lehigh Coal and Nav. Co	44⅞	43⅞	44	4206
Penn. Canal	—	—	*9	—
Buck Mountain Coal Co.	—	—	*25	—
Fulton Coal Co.	—	—	*3⅛	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co	—	—	75	—
St. Nicholas Coal Co	—	—	*1	—
Cambria Iron Co.	—	—	15½	—
Crane Iron Co.	—	—	*25	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	—	—
Total shares sold				16,659
Sales for the week previous				47,743
Decrease				31,084

* These quotations are nominal.

BONDS.

	Sales.	Price
H. and B. T. RR. 1st mortgage, 7s.	—	—@107½
" " " 2d " "	2,000	—@106
" " " 3d " cons	—	—@ 43
Lehigh Valley RR. Con. mtg. 6s, cou	2,000	—@105⅝
" " " 7s, 1910	3,000	—@113
" " " 6s Reg.	2,000	—@108¼
" " C. M. 6s 1923	9,000	—@ 99
Pennsylvania RR., 1st mtge. 6s	5,000	104¾@107
" " gen. " cou. 1910	2,000	106 @106½
" " gen. " 6s, reg.	2,000	103⅛@103¼
" " Cons. M. 6s reg.	—	—@ 98
Phil. & Reading RR. 7s '93	—	—@107
" " G. M. 7s, reg.	2,000	—@106
" " " " 7s cou.	—	—@107
" " new convertible 7s.	1,000	—@ 97½
" " 6s 1880	3,000	—@105
Phil. & Reading C. & I. Co. Deb. 7s	—	—@—
" " Locust Int. tract	—	—@—
Lehigh Coal & Nav. Co., 6s '84	4,300	—@103
" " " RR. 6s, '97	100	—@103½
" " cov. m. 7s	—	—@—
" " 6s gold loan	5,000	103¼@105
Penn. Canal, 6s	1,000	—@ 75½
Penn. and N. Y. Canal, 7s	—	—@108
Ches. and Del. Canal, 6s	—	—@—
Susquehanna Canal, 6s	—	—@ 70
Delaware Division Canal, 6s	—	—@—
Susquehanna Coal Co. 6s	5,000	—@ 77
Buck. Mount Coal Co. 6s	—	—@—
Penn. Gas Coal Co. 6s	—	—@—
Honeybrook Coal Co. 7s	—	—@—
Total amount of sales	$40,400	

Closing quotations, in the absence of sales, represent the latest prices bid.

Gold and Silver Stocks.

NEW YORK, FRIDAY EVENING, July 7, 1876.

Mining shares are irregular with the general tendency to lower prices.

Consolidated Virginia is over $5 per share lower, having sold down to $52¾ per share. The bullion product of this mine for June will show a decided falling off compared with previous months.

California is lower by $3 per share. It is stated that on the 1,600 level the east and west cross-cuts continue in excellent ore, and the level is opening very fine. Bullion returns for the current month, to the 26th ult., foot up $884,520.

C. and C. Joint Shaft.—This work is making fair progress, the 1,500 feet station being completed.

Overman has made a notable advance of $8 per share.

The Redington Quicksilver Mining Company has declared its regular monthly dividend of $10 per share.

Sutro Tunnel.—This work had been driven on the 22d of June 13,532 feet, the rate of progress being about 70 feet per week. Holes drilled for the week, 288; holes blasted, 396; aggregate depth, 2,386 feet; average depth, 8·28 feet; powder consumed, 1,249 lb.; exploders consumed, 396; drills sharpened, 697; rock extracted, 860 tons, equal to 430 car loads. The rock in the heading, which is propylite, drills and blasts fair, and during the past week, with the exception of two days, has been quite hard, both for drilling and blasting. At present it is looking more favorable. There is no water in the face. Water measurements during the week have been: on the 17th, 131; 19th, 132; and 20th, 128 miners' inches. The water in No. 3 shaft is 448 feet from the top of the shaft.

QUOTATIONS:

	No. of feet on Vein.	No. of shares.	June 29.	July 5.
Sierra Nevada	3,300	100,000	$14	$14
Union Consol'd.	600	100,000	11	—†
Mexican	600	108,000	28	28
Ophir	675	108,000	50	48
California	600	540,000	73	70
Consol'd. Virginia	710	540,000	58	53
Best & Belcher	540	100,800	46	45
Gould & Curry	612	100,800	15	15
Savage	771	112,000	19	21
Hale & Norcross	400	112,000	9	9
Chollar Potosi	1,400	28,000	75	76
Alpha Consol'd.	306	30,000	47	46
Imperial Con.	468	500,000	6	—†
Yellow Jacket	957	120,000	31	30
Kentuck	95	30,000	12	13
Crown Point	541	100,000	10	10
Belcher	1,040	104,000	17	17
Overman	1,200	38,400	57	65
Caledonia	2,188	100,000	8	8
Justice	2,100	105,000	22	23
Raymond & Ely	5,000	30,000	9	9
Meadow Valley	4,400	60,000	1	—†
Eureka Consolid.		50,000	12	12
Eureka G. V.	1,680	20,000	3	—†
Silver Hill	5,400	54,000	7	7
Julia	3,000	110,000	9	9

† We have no quotations of these stocks.

Copper Stocks.

Specially reported by Messrs. WILSON W. FAY & Co., Bankers and Brokers, Room 7 Traveller Building, 31 State Street, Boston.

BOSTON, THURSDAY EVENING, July 6, 1876.

We have very little market to report to-night, on account of the recent holidays, "from the 1st to the 5th inst." Allouez, not a bid or ask for 10 days. Calumet holds firm at 164¼, bid. Central is a point lower at 31, bid, but it is a stock mostly held in New York, and very seldom dealt in here. Copper Falls is a trifle lower, at 3, bid. We understand that about 5,000 shares have already paid the $2 assessment. National hangs fire at 1, bid, and Quincy is a little stronger at 43½, bid, and will undoubtedly go higher (if the inside parties want it to). In small copper, nothing doing.

The following copper mining companies will hold annual meetings in Boston on the dates annexed:

Allouez Mining Company, August 8.
Calumet and Hecla Mining Company, August 16.
Copper Falls Mining Company, September 13.
National Mining Company, October 14.

DESCRIPTION.	Par Value.	No. of Shares.	CLOSING. Bid.	Asked.
Allouez	$50	20 000	$ —	$ —
Calumet and Hecla	25	80,000	164 25	164 50
Central	25	20,000	31 00	32 00
Copper Falls	50	20,000	3 00	3 25
Dana	25	20,000	8	12½
Franklin	25	20,000	9 25	9 75
Humboldt	25	20,000	9	11
Madisca	25	20,000	27	30
Mesnard	25	20,000	37½	50
Minnesota	25	20,000	1 50	2 00
National	15	20,000	1 00	1 12½
Osceola	25	40,000	21 00	22 00
Petherick	25	20,000	50	55
Pewabic	25	20,000	2 50	3 50
Phenix	25	20,000	—	—
Quincy	25	20,000	43 25	43 50
Ridge	25	20,000	4 00	4 25
Rockland	25	20,000	25	30
International Silver	20	60,000	9	12¾
Star	25	20,000	37½	50
Superior	25	20,000	9	11
Duncan Silver*	20	60,000	1 25	1 37½

*Assessment paid.

Gas Stocks.

NEW YORK, FRIDAY EVENING, July 6, 1876.

The market for this class of securities is as dull as it can possibly be, no transactions being reported, and but few changes in the quotations, and those to lower figures.

New York Gas Company.—We lower the quotations of this stock $5 per share.

The New Bedford, Mass., Gas Company, has declared a semi-annual dividend of 4 per cent., payable on demand.

Brookline, Mass., Gas Company.—This company has its dividend period on the 15 inst., it should be 4 per cent. on a share capital of $350,000.

The East Boston Gas Company, has its dividend period on the 15th inst., it should be 5 per cent. on a capital stock of $220,000.

Chelsea, Mass., Gas Company.—The dividend period of this company will occur during the present month.

Metropolitan Gas Company.—The coupons on the bonds of this company are due during the present month.

The Suburban Gas Company, announces a dividend ayable on demand.

The following list of Companies in New York and vicinity are corrected weekly by GEORGE H PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad st., N. Y.

Quotations "bid" and "asked" of New York City and Vicinity Gas Companies are on the $100 of stock and not on one share.

Companies in New York and Vicinity	Cap. Stk.	Par.	last Divid.	When Paid.	Bid.	Askd.
			pr.c			
Mutual, N. Y.	$5,000,000	$ 100	2½	Jan. '76	114	114½
" " Bonds	900,00	1,000	†3½	Feb. '76	105	
NewYork, "	4,000,000		5	Jan. '76	130	135
Metropol. "	2,500,000	100	5	Mar. '76	145	147½
" " Certf.	1,000,000	...	3½	" "	103½	
" " Bonds	500,000	1,000	3½	Jan. "	102	102½
Harlem "	1,850,000	50	4	Feb. '76	118	122
Manhattan"	4,000,000	50	10	July "	235	240
Brooklyn, B'klyn	2,000,000	25	5	June '76	185	195
Nassau "	1,000,000	25	4	Jan. '76	70	78
" " Certf.	700,000	1,000	3½	Nov. '76	94	95
People's "	1,000,000	10	3½	Jan. '76	45	50
" " Certf.	300,000	1,000	3½	Jan. '76	85	87½
" " Bds	325,000	....	3½	Feb. "		95
Metropol. "	1,000,000	10	3½	Nov. '75	70	75
Wmsburgh "	1,000,000	50	5	Jan. '76	122	130
" " Certf.	1,000,000	....	3½	Jan. "	100	102
Citizen's "	1,200,000	20	2½	Jan. '76	85	90
" " Certf.	320,000	1,000	3½	April "	99	101
J. C. N.J.	386,000	20	5	July,'75	160	170
Centl. Westch. N.Y.	466,000	50	4	July, "	95	100
Subur'n " "	390,000	50				95

† Gold.

Companies out of Town.*	Cap. Stk.	Par	Bid	Askd
People's " " of J. C.			120	133
¶Citizen's G. L. Co., New'k, N.J.	1,095,000	50	85	90
Perth Amboy G. L. Co., N. J.		25		95
Hempstead " " L. I., N.Y.	40,000	100		100
Jamaica, " " " "	25.00	100		100
Richmond Co., S. I. "	300,000		100	105
Citizens', Rochester, "		100	45	50
Rochester Gas Co., "		100	50	
‖People's G. L. Co. Albany, "	1,000,000	100		25
§Mutual " Buffalo "	750,000	100	48	55
Mutual " Detroit Mich.		50	18	
TroyG. L. Co., Troy, N. Y.			108	
Citizens " " "	600,000	100		100
Brockport, N. Y., G. L. Co.	25,000	100	60	80
Saugerties G. L. Co.	15,000	100	100	115
†Baltimore G. L. Co., Balt., Md	2,000,000	100	155	1 65
St. Louis G. L. Co., St. Louis, Mo	600,000		110	130
People's G. L. Co., Balt., Md	2,000,000	25	24½	25¾
Hannibal G. L. Co., Hanni., Mo.	100,000	100	95	100
La Clede, St. Louis, Mo	1,200,000	100		102
Lewiston G. L. Co., Lewis., Me	400,000	100	50	85
Chicago G. L. Co., Chicago, Ill.	2,000,000	100	125½	
Jacksonville, Ill.	120,000	100	82	
‡Lima, Ohio	60.000	100	10	
Derby G. L. Co., Derby, Conn.	160,000	100	60	80
Woonskt G. L. Co. Woonskt, R.I.	150,000	100	100	
Fort Wayne G. L. Co. F. W., Ind		100	90	100
North. Liberties G. L. Co. Phila.		25	29	
Wilkes-Barre G. L. Co W. B. Pa.		50	70	
Washington G. L. Co., Phila.			42	43
Pottsville, Pa. Gas Co.		50	40½	
Portland G. L. Co. Portland, Me	350,000	50	72	75
Hartford G. L. Co., Hartford, Ct	700,000	25	41	
Boston G. L. Co., Boston, Mass.	2,500,000	500	785	790
East Boston, Mass		25	132	
Chelsea G. L. Co. Chelsea, "	300,000		139	
Cambridge G. L. Co., Cam., "	700,000		132¾	
Louisville G. L. Co., Louis., Ky.			127	
Cincinnati G. L. Co, Cincin, O.				200
Carondelet G. L. Co., Mo.		50		6¼
S. F. G. L. Co. San Francisco, Cal	10,000,000	100	99¾	99½
Stillwater G. L. Co., Minn.	50,000	50		26
City G. L. Co. Montreal, Can.	1,440,000	40	165	166
Consumers G. L. (old.) Tor., Ont	600,000	50	133	
Hamilton G. L. Co., Ont.	150,000	40	112½	
Halifax G. L. Co., Halifax, N.S.	400,000	40		147¼

* These quotations represent the latest obtainable prices at which sales were made.

† This Company has issued $1,000,000 in certificates in addition to their stock indebtedness, on which they pay interest at the rate of 6 per cent. gold.

‡ This Company has $30,000 in bonds outstanding.

§ $200,000 represents the bonded indebtedness of this Company.

‖ $350,000 of the indebtedness of this company is represented by bonds.

¶ $124,000 of the indebtedness of this company is represented by bonds; also $53,000 in certificates, which is included in the aggregate stock debt quoted.

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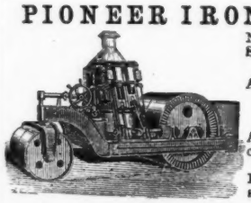

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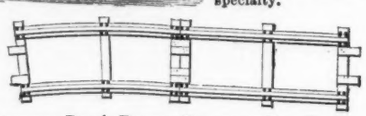

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